NEWSLETTER
2/2007

ESSC EUROPEAN SOCIETY for SOIL CONSERVATION

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Cover photo: Field visit to Ondangwa (Namibia) during a workshop on desertification in April 2006. The workshop was part of AIDCCD-EU (Active Exchange of Experience on Indicators and Development on Perspectives in the Context of the United Nations Convention on Desertification).

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Contents

This issue of the ESSC Newsletter presents the first of our 'Guest Editorials'. This is an opportunity for a leading authority in the soil science community to offer their perspectives on issues relating to soil protection. The first in our series is from J.L. Rubio (Valencia). Scheduled Guest Editorials include Richard Arnold (Washington DC), Roy Morgan (Silsoe, UK), Mark Nearing (Tucson, Arizona) and Samran Sombatpanit (Bangkok). Eventually, we envisage this collection of essays developing into an authoritative book.

Soil conservation:

from agricultural productivity to multifunctionality

José Luis Rubio
President of the ESSC
Centro de Investigaciones sobre Desertificación – CIDE (CSIC, Universitat de Valencia, Generalitat Valenciana)
Camí de la Marjal, s/n. Apartado Oficial.
46470 Albal (Valencia)
España/Spain.
Tel: 00 34 961220540.
Fax: 00 34 961263908.
E-mail: jose.l.rubio.uv.es

The concept of soil conservation in its wider sense has undergone important changes through history. For centuries, the care of soil and its appropriate management for retaining it in situ was fundamentally focused on improving agricultural yields. Perceptions of soil as a crucial base of life in ancient cultures progressively evolved to a more pragmatic vision, with close connections to food production for survival. Figure 1 presents a condensed scheme

of some of the many influences that have shaped the evolution of soil conservation through time.

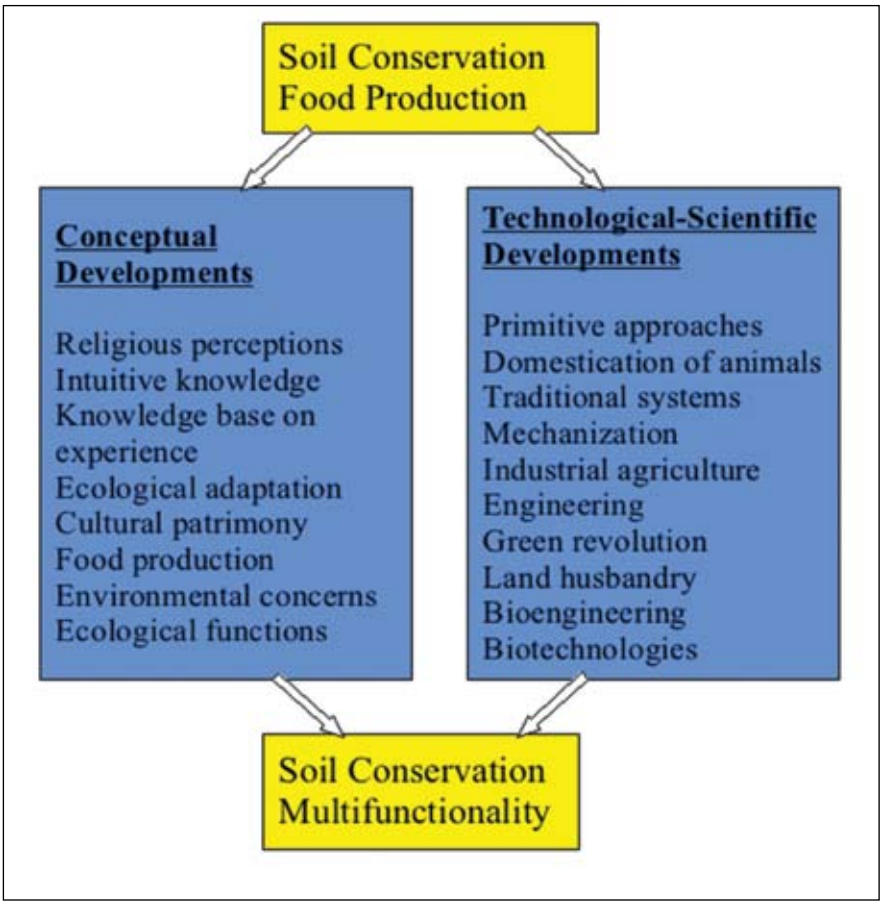

Figure 1. *The context of conceptual and technological-scientific evolution of soil conservation.*

For centuries, approaches to soil, management and conservation were based on intuitive, rather than organized, knowledge. This empirical knowledge has demonstrated, through time, the observation capacity and ingenuity of society to obtain goods and biomass from the soil. Still today in many places, the beneficial results of the long interaction of farmers with the soil remain visible. In fact, there are agrarian uses of the land with lasting success of sustainability and productivity present in countless agrarian landscapes on all continents, after centuries of service to humanity. It is fitting to recognize the wisdom of farmers who have kept land as a functional system providing goods and services to humanity. However, also in many cases, civilizations have been active agents in altering

soil and destroying the environment (Carter and Dale, 1974) and the heritage of misuse of the land is also often visible in the landscape. In Europe, there are many examples of such misuse.

The selection of land for agriculture or pasture was made through accumulated empirical familiarity with the performance of different landscape units. A classic example is soil use assignation in traditional Mediterranean agriculture. Horticultural use was assigned to rich fluvisols near water-courses; vineyards usually occupied some of the best soils located on plains or gentle slopes, owing to wine appreciation and economic reasons and cereals occupied less favourable situations with less fertile soils. Trees such as olives, almonds, figs and carobs, were situated on inland valley slopes, frequently with some soil conservation structure, such as terraces or stonewalls. This was a patient, empirical process of learning, taking into account failures and mistakes in a long lasting exercise of trial and error.

The ancient cultures of the Mediterranean basin have rich traditions of contributions to the good care of soil (Boulaine, 1989). One the earliest authors was Magon, who was a great agronomist from Carthage (circa 150 BC), who strongly influenced agricultural practices in his time. He produced 27 volumes of a compendium on agriculture. His views and recommendations influenced the Romans and later the Arabs and Latin peoples. The Hispano-Roman Columella (circa 60 BC) is another distinguished predecessor, who is considered a forerunner of soil science for his sound approaches to understanding soil functions and to practical application of this acquired knowledge. He gathered the available knowledge of his time and, incorporating his own views, published the book 'De de Rustica'. Columella differentiated six soil types and advocated an early test for texture. He emphasized the importance of practical experience and observations in approaching soil management.

It is well known that Romans were pragmatically and technologically oriented to act efficiently in any undertaking. They organized agricultural management to supply abundant provision of food and others elements, such as wine, for their high demands and needs. However, the utilitarianism and pragmatism of Romans were not always adequately applied. They divided land into fixed drawn squares without regard to the different soil and geomorphological features and employed slaves or poorly-treated peasants to take responsibility for managing the land. These were unwise decisions for the appropriate care of the land. The expression *agri-deserti* was used at that time to indicate land abandoned owing to severe degradation. It is considered that the Mediterranean region suffered massive land degradation during Roman times.

It is worth mentioning the Spanish-Arab Ibn El awaran (Abu Zacaria), from Seville, who in 1150 published a book ('Book of Agriculture'), gathering and enlarging with his own contributions, the accumulated knowledge of agriculture and soil management stemming from Greek, Roman and Arab experience. The book was translated into French and still in 1977 a new edition was published in Tunis. The base of their conservationism, if we could use this term in the context of their times, was the adaptation of the type of agrarian use of the land to its potentiality and limitations. This remains as one of the basic concepts of any soil conservation strategy. At that time, they used only human or animal (domesticated) energy, therefore, usually the environmental impacts of their interventions were moderate.

The Mediterranean cultures made sound progress in their struggle and ecological adaptation to water scarcity and precipitation variability in sub-humid and semi-arid environments. They became masters in the coupling of water management with soil conservation. These include the impressive developments of bench terraces, deviation chan-

nels, water harvesting systems and irrigation channels and these can still be observed today in many Mediterranean landscapes. To increase soil fertility and conserve soil they developed many techniques, such as fallowing, manuring and terracing. Besides the need to incorporate measures, mainly related to soil-water interaction, their general approach was empirically developed to consider the relationship of soil potential or soil quality to its aptitude of use. This remains a cornerstone principle of soil conservation. Mediterranean civilizations also had damaging environmental impacts (Thirgood, 1981; Rubio, 1987) and some consequences of historical destruction and poor land management remain visible in much of the Mediterranean landscape, as a heritage that intermixes with more modern impacts. However, the positive aspects of interaction with soil and the accumulated empirical knowledge were transmitted through a series of pragmatic 'recipes' and general recommendations. Occasionally, these were reproduced in outstanding publications, such as the 'Agricultura General' of Alonso de Herrera (1470 – 1550).

For centuries, agrarian production and the provision of food for humankind remained the main and crucial vision of the interaction of societies with soil. But also many new concepts related to soil were developed through time. During the 'Age of Enlightenment', some individuals began to consider soil in a wider perspective, as a vital component of the environment with strong connections to landscapes. This was the vision of Alexander von Humbolt, who developed an ambitious and pioneering approach, with the final objective of integrating, synthesizing and harmonizing the three essential components of landscape. These were the biophysical, the historic-socio-economic and the mental or psychological parts (Humbolt, 1876). In this holistic approach to landscape, soil plays an essential role as the underlying component of the system (Rubio, 2007). In this context the intimate connection of soil differentiation and distribution in relation to climatic zones was the great vision and contribution of the Russian Vasili Dokuchaiev, laying down the foundation for soil classification systems and acknowledged as the 'father of soil science'.

The first Soil Conservation Service was created in 1907 in Iceland as a response to the dramatic consequences originating from the destruction of fragile forest ecosystems by the first Scandinavians settlers (Arnalds and Runolfsson, 2005). The coming of the Industrial Age represents the change from humans or domesticated animals as the energy source for agricultural operations, to powerful engines and machinery. Mechanization introduced labour-saving tools, but also represented a strong agent of transformation and change. Suddenly the limited capacity of human intervention expanded to a great potential for clearing, levelling, labouring, terracing and transforming previous natural systems to agricultural land. The syndrome of mechanization has being repeatedly exemplified in connection with the early agricultural settlers in the western USA and the Dust Bowl episodes (1920 – 30s).

Impacts of the destructive farming techniques in the US Midwest forced the US Government to take responsive measures. Hugh Hammond Bennett led the movement to change the orientation of agricultural expansion to a more sound approach of preventing soil deterioration. He is considered the 'father of soil conservation', after establishing systems to encourage farmers to adopt soil conservation schemes. He was also decisive in pushing and contributing to the important soil conservation developments in the USA, both in conceptual and scientific aspects.

Bennett led the creation of the 'Soil Erosion Service' (SES) and 'Civilian Conservation Corps'. Working together, both agencies started the implementation of early plans for soil conservation farming. The SES becomes the Soil Conservation Service (SCS) in 1935. The SCS initiated its activities enthusiastically, introducing techniques such as strip crop-

ping and contour ploughing, amongst others. Milestones in the history and evolution of soil conservation in the USA included the initiation of Conservation Districts (1937), Federal legislation (Flood Control Act (1944), Clear Water Act (1970), Food Security Act (commonly known as The 'Farm Bill' (1985)), the Emergency Watershed Program (1990s) and the foundation of the Natural Resources Conservation Service (1994). These developments influenced soil conservation across the world.

Development of soil conservation is strongly connected to schemes of socio-economic expansion, territorial colonization and agricultural production, which we have briefly commented on above. These processes continued to evolve after the Second World War. The period from 1860 to 1980 has been called the "period of the engineers' work" by Roose (2006), owing to the development of modern strategies of terracing, watershed control, rural hydraulics and reforestation in many parts of the world, including the Mediterranean basin and North America.

The global phenomenon of 'the Green Revolution' (Bourlaug, 2003) implied new perspectives and adaptations of soil conservation schemes to the challenges of the demands of more soil productivity to cope with feeding an increasing world population. During the 1980s, new strategies were introduced with more participatory and integrated approaches. Land husbandry and agroforesty (Moldenhauer and Hudson, 1987; Shaxson *et al.*, 1989) exemplify these approaches. The aims were to consider not only soil conservation by itself but also the socio-economic conditions, the needs of farmers, improvements in farming techniques, the proper combination of simultaneous plant covers and increased water infiltration. Over the last three decades, we are gradually developing more holistic perspectives (with some conceptual roots in the XVIII – XIX centuries), recognizing the fundamental role of soil conservation in connection with both sustainable agriculture and environmental implications.

The Rio de Janeiro Summit in 1992 represented a landmark and a point of 'no return' in the consideration of the environmental dimension and implications of human economic activities, including agricultural and soil aspects. The subsequent UN Conventions on Loss of Biodiversity, Climate Change and Desertification globally institutionalized the need to incorporate new and more intelligent approaches in our interaction with the finite resources of our planet. At present, globalization and new trade and markets schemes are introducing new elements affecting agriculture and soil conservation. In this new global perspective and more than before, we still have the fundamental challenge to produce food for the unstoppable demographic growth. Nevertheless and slowly, new visions and perceptions of soil conservation are evolving.

Today there are increasing social and environmental demands that include soil issues. Under the perspective of soil protection schemes, society is considering new aspects, such as soil diversity, soil ecological functions, soil as a crucial environmental link, soil threats and new soil uses besides the traditional role of soil for biomass production (agriculture, pasture and forest). The ongoing EU Strategy on Soil Protection (Van-Camp *et al.*, 2004) includes some of these elements. The initiative of the EU was launched in April 2002 with the Communication of the European Commission entitled: 'Towards a Thematic Strategy for Soil Protection'. This document is a comprehensive analysis of the status of Europe's soils, highlighting the importance and dimension of soils as a threatened and non-renewable natural resource. Currently, the Commission is engaged in the discussion and elaboration, for the first time in the history of the EU, of a Soil Framework Directive for the protection of Soil (Rubio, 2006). The European approach is innovative in the sense of incorporating this new and wider environmental perspective. The developments in soil conservation approaches in the USA and the evolution of their social and le-

gal interface from the times of the Dust Bowl are the reference base. However, the efforts of the EU are oriented to a wider consideration of the role of soil and its environmental functions. The main soil functions considered in the EU Strategy for Soil Protection are: food and biomass production; habitat and gene reservoirs; sources of raw materials; the climate regulating system; hydrologic cycle regulator; buffer and filtration functions for toxic compounds; physical support of urbanization and infrastructures and cultural function and soil as a historical and cultural archive. Hopefully, the EU Strategy will open the door to conceptual and practical implications of soil as an important regulating system of both climate and the water cycle. The implications of the 4th IPCC Report (February and May, 2007) and its alarming projections oblige us to consider the potential of every natural system to buffer the trend of global warming. The regulating capacity of soil in relation to gases with greenhouse effects (such as CO2, methane and nitrogen oxides) and its role as a source of dust and aerosols, deserves attention for its strong potential for both conserving soil and contributing to ameliorating the rapidity of climate change. Perspectives on water scarcity are also linked to soil. Evaluations and prospective analysis from international organizations (UN, EEA, OECD, WRI and WWI) unfold a worrying future panorama. The three developments aggravating water scarcity are: permanent and sustained increases in water demand (which has drastically increased since 1950); reduction in precipitation owing to climate change in drylands and loss of soil regulating capacity. This last aspect is clearly linked to the need to promote good soil stability and soil health to enhance its important role as a regulating system of infiltration/runoff and as a water reservoir.

Soil conservation history shows important evolutionary stages, both in conceptual aspects and in technological-scientific developments. Figure 2 presents some items of this evolution, mainly related to perception and to adaptation of new societal needs and demands. The conceptual perception shows substantial changes through time. The initial superstitions and beliefs of early cultures evolved to intuitive knowledge, based on observation and empirical understanding of natural patterns. Progressively, farmers have being accumulating records and registers of performance of the land and plants in response to different practices. Therefore, over the centuries a basic adaptation to the potential and limitations of the natural environments underpinned successful approaches to the use of land. This knowledge has been transmitted through generations. The poor adaptation to basic ecological conditions of the territory or the variability and impacts of extreme climatic events often resulted in failures in crop production and problems of famines or even survival. There are abundant references in the literature about these periodic problems. The paramount importance and the close contact with agricultural activities over centuries of socio-economic and cultural development left an imprint on the character of people and societies in most countries and continents. Food production is the 'leif motif' of agriculture and soil conservation. Considering the exponential growth of world population, this aspect remains dominant. However, in developed countries the success in increasing agrarian productivity and some socio-economic trends, resulted in substantial changes in the proportion of the population dedicated to agrarian activities. Furthermore, during the last third of the 20th Century, society began to be concerned with impacts and deterioration of the environment. Agricultural activities started to be critically examined. High yields, high productivity and surplus of agricultural products reduced the need for agricultural surfaces. Because of these tendencies, much land will probably undergo important changes in land use, at least in the EU and other developed countries. Newly abandoned land will require the development of new conceptual approaches and management schemes to maintain ecological functions, landscape

features and biodiversity. In this new framework, soil conservation will have room for substantial contributions.

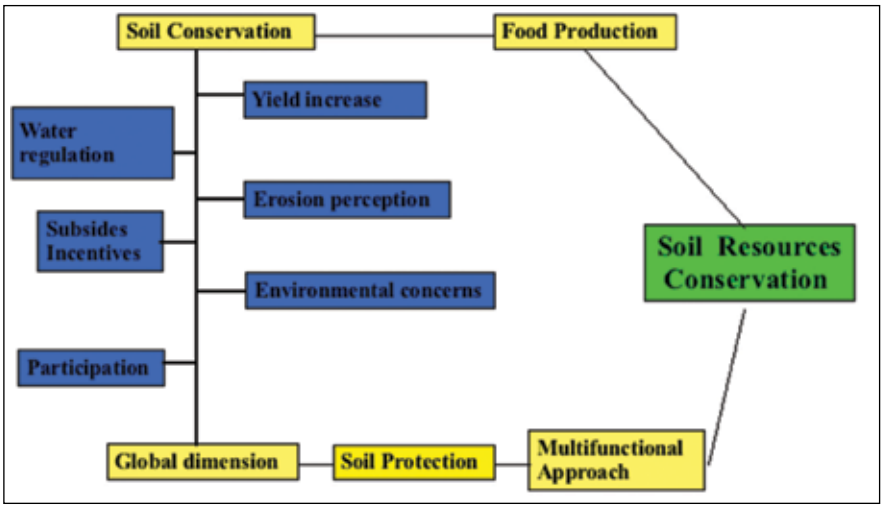

Figure 2. *The evolution of soil conservation concepts.*

Today's soil conservation frameworks should expand to include new perspectives and inter-linkages in the context of the integrated functioning of terrestrial ecosystems. However, it is imperative that we maintain vital aspects from earlier schemes, including maintaining soil fertility and improving soil-water interactions.

In the context of technological-scientific fields, we have also important changes in the evolution of soil conservation approaches over time. Adequate ploughing, levelling, fallowing, manuring and terracing are on the basis of early primitive techniques. The prompt incorporation of domesticated animals represented a companion source of energy that have been with farmers for centuries and remain so in many parts of the world. The progressive adaptation to the soil, geomorphology and climatic conditions of every specific piece of land and designing and applying soil and water conservation systems is an outstanding demonstration of human ingenuity and commitment. Today, traditional soil conservation systems represent a rich agricultural, cultural and landscape legacy. There is a need to incorporate this inheritance in new soil conservation approaches and paradigms. In many European areas, like in the Mediterranean, they still play an important role in maintaining soil ecological functions, including water regulation.

Today we can see a steady trend in the pattern of soil use in Europe, with important future consequences for the landscape and the functioning of terrestrial ecosystems. This trend represents a change of soil use from traditional ones (agriculture, pasture and forestry), to relatively new ones that will increase the relative importance of nature conservation and urbanization. This trend of change should be seriously evaluated for its implications for soil conservation and soil quality in the context of multi-uses and multifunctional approaches. Under this perspective an important question arises: for what purpose should soil conservation be oriented? As we have highlighted above, agricultur-

al aspects have been at the core of soil conservation, but nowadays we should consider new conceptual schemes. These affect the standards we apply to our present evaluations of soil quality. For example, a salt affected soil is of poor quality for agriculture. However, saline soils imply a special terrestrial ecosystem, with peculiar edaphic conditions that support adapted and specialized vegetation. In turn, this contributes to the richness in biodiversity and landscape diversity. Moreover, today costly projects to reclaim salt affected soils for agriculture in Europe have very little chance of being implemented. The same considerations apply to wetland soils. They are not suitable for agriculture, but they play a crucial role for nature conservation, by maintaining singular sites of specialized fauna and flora, thus also contributing to landscape quality. Therefore, we have soil types that not should be used for agriculture, that need new schemes for adequate management and protection, including standards and indicators of quality soil.

The above consideration should be expanded to further develop soil conservation to include the implications of soil as a natural entity. We propose a new scheme that could be called 'Soil Resources Conservation'. This scheme considers soil as a natural entity, with intrinsic diversity expressed in different soil types. The various soil types have different properties, characteristics and dynamics and different potential for uses and functions and different responses to impacts. The implication is that soil types or soil units should be appraised with specific soil conservation considerations, not only under biomass production schemes, but including considerations regarding their different susceptibility, vulnerability and resilience to environmental problems.

Modern society places demands on the soil science community to develop new ideas, new information schemes and new conceptual developments to deal with new perceptions of the role of soil in the global and local functioning of terrestrial ecosystems. The demands for maintaining biodiversity (including pedodiversity), carbon cycle regulation, combating desertification, food production, water resource regulation and landscape maintenance requires new soil protection paradigms that should be developed under soil multifunctional and multiuse approaches. The concepts of soil as a crucial and menaced natural resource demands a general framework for sustainable use of soils that should be developed under the wider consideration of soil as a multifunctional medium, including new technological developments in soil management in accordance with ecological principles.

We propose a multidisciplinary and co-ordinated effort to further develop a conceptual scheme of Soil Resources Conservation. This scheme should include attributes of soils as a multifunctional medium, with soil quality for different uses and strategies to include soil protection within a wider sustainable soil management framework.

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Marketing State Soils in the United States:

EXPANDING PUBLIC AWARENESS OF SOIL AS A VITAL NATURAL RESOURCE

Maxine Levin
United States Department of Agriculture, Natural Resources Conservation Service, Soil Survey Division, Washington DC, USA
Tel: 00 1 202 720 1809
E-mail: maxine.levin@wdc.usda.gov

The 'State Soil' designation in the USA has served to expand public awareness of soils as vital to the health of all natural resources. Professional soil science societies and the US Soil Survey partners have chosen state soils in all US states. Elementary and junior high school students are often the ones responsible for pushing state legislatures to ratify a state soil. Their quests have resulted in 20 states officially signing a state soil into law. Nationally-distributed newspapers and magazines have run stories about the students and their quest for the recognition of soil's importance.

A good example of this process was in the State of California. Middle school teacher Alex Lehman seeking to engage his students with a meaningful activity and an integrated curriculum approach, proposed the idea of naming the local San Joaquin Soil of central California the official 'State Soil'. Alex solicited the aid of State legislators, as well as local professional soil scientists, to assist the students. The students did their own research, looking at other states, which already had an official state soil. The students collected papers on the 'History of the San Joaquin Soil', 'The Origin and Formation of

the San Joaquin Soil', and appropriate maps and soil descriptions to be prepared to talk to their state lawmakers. With the help of a State Senator and the students, the San Joaquin Soil was chosen as the official state soil in 1997, the same year that the students proposed it. Similar experiences occurred in Nebraska (1979), Nevada (2001), Oklahoma (1987), Kentucky (1990), Mississippi (2003) and Alabama (1997), to name a few. As one student remarked to his Governor at the signing-in ceremony in Nevada: *„we want people to understand how farming the soil puts food on the table"* – a lifelong memory and learning moment for both of them.

What is a 'State Soil'? An official state soil is represented by a soil series that has special significance to a particular state. In the US, areas with similar soils are grouped and labelled as soil series because of their similar origins, as well as their physico-chemical properties. A soil series generally is named after a town or landmark in or near the area where the soil series was first recognized. (A soil series is a naturally occurring entity on the landscape. Therefore, a given series does not necessarily occur within the confines of only one state. Several state soils range beyond the respective states in which they are honoured). Each state in the USA has selected a state soil, 20 of which have been legislatively established. These 'Official State Soils' share the same level of distinction as official state flowers and birds. Representative soils have also been selected for the US Territories of Puerto Rico, the US Virgin Islands and Guam. In 1979 Nebraska was the first state legislature to ratify a state soil into law.

State soils have done much to educate a broad public about the importance and benefits of healthy soils. *„Why a state soil,…isn't that just dirt?"* is often asked during the legislative process. This provides a public opportunity for soil scientists to educate legislators and general audiences about why soil is an important resource. Using the designated 'State Soil' as a focal point for teaching both young and old, the US Soil Survey and soil science professionals have provided informational web sites, hands-on demonstrations, posters and public information campaigns. Examples of these web sites can be found at:
http://soils.usda.gov/gallery/state_soils/
http://www.ieway.com/wspss/wspss_statesoil.html; or
http://www.soils.org/smithsonian/index.html.

The USDA-Natural Resources Conservation Service and professional soil scientist organizations and societies have 'State Soils' in a variety of educational and promotional products, such as bookmarks, t-shirts, planners (date books or calendars), magnets, brochures and trading cards (like sports trading cards for children that have the statistics of the state soils as well as a picture.)

NRCS Missouri State Soil Scientist Dennis Potter remarked on the success of State Soil trading cards as a very valuable informational tool with younger children. For the high school level, Missouri used the Menfro State Soil landscape as the location of the state soil judging contest. *„It really captured the attention of those high school students"* said Dennis. As an adult marketing tool, the Menfro soil monolith from Missouri has been used by the Smithsonian Museum to advertise their planned exhibit on soils. In addition, a conference is scheduled for 2007 for the American Tree Farm System in Missouri, and, very purposefully, the conference planners have used the Menfro Soil complex to illustrate all their demonstrations. Kentucky State Soil Scientist Bill Craddock pointed out that his State's soil (the Crider Soil) is valued during farmland sales as the market standard for the best of agricultural soils in the area.

Starting in Summer 1998, the USDA Natural Resources Conservation Service (NRCS) assembled a comprehensive US Soil Monolith collection that included all 50

state soils, as well as the US Territories that have soil surveys. On 22 April, Earth Day, a day dedicated to raise awareness of the health of our planet, these monoliths were displayed on the National Mall (between the Capitol Building and the Washington Monument) in tribute to the Centennial of the National Cooperative Soil Survey. Some 1,000 visitors per day visited the display and learned about the soils in their states. The monoliths will be assembled together again for the 2008 Smithsonian Soils Exhibit. The Soil Science Society of America (SSSA) and USDA NRCS are now working with the Smithsonian Institution's National Museum of Natural History in Washington DC, to plan a soils exhibit as part of their 'Forces of Change' Programme. The exhibit will include a display of the US State Soil Monolith collection and an educational, interactive section to help the Museum's over 6 million annual visitors understand how soil is intricately linked to the health of humanity, the environment and the planet. Related publications and web activities will reach millions of additional people. A travelling exhibit will be sent to hundreds of other museums and libraries to reach additional communities. Never before have we had such an opportunity to advance the understanding of soil. This work will progress our journey to sustain Earth and its people by educating visitors to the Smithsonian on the importance of Soil and Earth sciences.

In Spring 2007 the US Department of Agriculture will add its newest addition to the US Soil Monolith collection, with a profile from the District of Columbia (DC). Aside from ratifying state soils in each state in the US, a new challenge may be to support approval of a 'National Soil'. Acknowledgment of a 'National Soil' in the US would lead the way for other countries to name nationally important soils that will then be recognized on a global scale. We encourage Soil Scientists all over the world to consider this concept of a designated soil to represent their province, state or country. Bringing attention to soils all over the world not only gives inspiration to our profession, but also encourages the public to have more awareness and support for our most precious natural resource.

State Soils of the United States

STATES	STATE SOIL	LEGISLATION	STATE	STATE SOIL	LEGISLATION
Alabama	Bama	April 1997	Nebraska	Holdrege	April 1979
Alaska	Tanana		Nevada	Orovada	May 2001
Arizona	Casa Grande		New Hampshire	Marlow	
Arkansas	Stuttgart	March 1997	New Jersey	Downer	
California	San Joaquin	August 1997	New Mexico	Penistaja	
Colorado	Seitz		New York	Honeoye	
Connecticut	Windsor		North Carolina	Cecil	
Delaware	Greenwich	April 2000	North Dakota	Williams	**
Florida	Myakka	May 1989	Ohio	Miamian	
Georgia	Tifton		Oklahoma	Port	April 1987
Guam	Akina	Oregon	Jory		
Hawaii	Hilo	Pennsylvania	Hazleton	*	
Idaho	Threebear	Puerto Rico	Bayamon	May 1999	
Illinois	Drummer	June 2001	Rhode Island	Narragansett	

Indiana	Miami		South Carolina	Bohicket	
Iowa	Tama	Feb. 1990	South Dakota	Houdek	
Kansas	Harney	April 1990	Tennessee	Dickson	
Kentucky	Crider	April 1990	Texas	Houston	
Louisiana	Ruston		US Virgin Isles.	Victory	
Maine	Chesuncook	April 1999	Utah	Mivida	
Maryland	Sassafras	Vermont	Tunbridge	March 1985	
Massachusetts	Paxton	May 1991	Virginia	Pamunkey	
Michigan	Kalkaska	Dec. 1990	Washington	Tokul	
Minnesota	Lester	West Virginia	Monongahela	April 1997	
Mississippi	Natchez	May 2003	Wisconsin	Antigo	Sept. 1983
Missouri	Menfro		Wyoming	Forkwood	
Montana	Scobey		Washington DC	Sunnyside	

*Hazleton was proclaimed the State Soil of Pennsylvania in a Governor's Proclamation on 21 April 1999.

**North Dakota does not have an official state soil. Each year the State Governor issues a proclamation designating a 'Soil of the Year'. The North Dakota Professional Soil Classifiers recommend the soil to the Governor.

Mike Risinger (right) State Soil Scientist in Texas presenting a plaque and Soil Monolith to the manager of the King Ranch at the National Co-operative Soil Survey Conference in Corpus Christi Texas in 2005.

Missouri State Soil and Monolith is featured in a display for the Smithsonian Soils Exhibit scheduled to open in the Museum of Natural History, Washington DC, in 2008.

Students in Reno, Nevada, are with their Governor signing the Orovada State Soil into law in May 2001.

Two of the soil monoliths to be used in the Smithsonian Exhibit.

Report on the International Workshop on the Cost of Inaction and Opportunities for Investment in Arid, Semi-Arid and Dry Subhumid Areas

Rome, 4 – 5 December 2006 – FAO Headquarters

SUMMARY OF MAIN CONCLUSIONS

The Workshop was organized in the context of the 'International Year of Deserts and Desertification' by the French Scientific Committee to Combat Desertification (CSFD), together with the French Ministry of External Affairs, the Global Mechanism of the United Nations Convention to Combat Desertification (UNCCD), IFAD, the United Nations Food and Agriculture Organization (FAO) and the Italian Ministry of External Affairs. Support was provided by the World Bank, the French Development Agency, the German Technical Co-operation Agency and the Sahara and Sahel Observatory (OSS).

Opening remarks were made by Mr. Hama Arba Diallo, Executive Secretary of UNCCD, Mr. Matthew Wyatt, IFAD Vice-President, Mr. Christian Mersmann, Managing Director, UNCCD Global Mechanism and Mr. Marc Bied-Charreton, President of CSFD.

The Workshop brought together 80 people in Rome from very different backgrounds with diverse competencies from the North and South: representatives of ministries and development agencies, international organizations, scientific institutes and universities, the private sector and producers' organizations. A series of brief presentations and discussions among these people from different sectors and educational background made for a very fruitful exchange on the question of the costs of inaction in combating desertification.

The presentations and exchanges focused on the economic and social costs of land degradation and ways of measuring them, on economic rates of return on projects in arid areas and on success factors and/or bottlenecks in supply chains from producer to consumer.

It was noted that rates of return can be as high as 30%, and that economic losses on degraded land could be as much as several percentage points of GDP per annum. The countries of the South underscored their need for operational methods to quantify economic losses on degraded land at the national level and to perform cost-benefit studies. It was also recommended that the relationship between the degradation of natural resources and increased poverty and migration be explored.

Generally, participants agreed that, beyond the biophysical dimensions of land degradation and desertification, it was necessary to reason and argue globally to plead the cause of development for drylands and those living on it.

It was demonstrated that losses in natural capital entailed losses in other kinds of capit**al that are indispensable for sustainable development. When land is degraded, expertise is diminished, poverty increases and human and social capital are also eroded, catching people in a poverty trap from which it is very difficult to extricate themselves.**

The Workshop also showed that investing in drylands is economically, socially and environmentally profitable. Stable public policy is needed to underpin investment, in the form of legislation, secure land tenure, price stability, education, health care and civil peace.

Participants fervently hoped that a **new line of reasoning** could be developed, taking into account all the components covered by the workshop, in order to persuade decision-makers nationally, in bilateral and multilateral co-operation agencies, and in producers' organizations and the private sector **to invest in drylands. Delegates from co-operation agencies indicated that they would support cost-benefit studies for projects under way and would share methods and results.**

It was recommended that **an international network on the cost of inaction** be set up to link all the actors having met at Rome. The Workshop Organizers would by late January forward to the participants, and to those having expressed a wish to join, the network's terms of reference, the texts of workshop presentations, reports by the rapporteurs and a summary of the discussion and main conclusions. **In the longer term, a corpus of texts on cost evaluation methods and the major findings of studies now in progress would be distributed in the form of a CD.**

SUMMARY OF DISCUSSIONS

WORKSHOP REPORT 1: 'THE COST OF INACTION: MACROECONOMIC AND SOCIAL COSTS OF DESERTIFICATION'

1 SOCIAL COSTS OF DESERTIFICATION

Participants adopted the recommendations outlined below:

The concept of migration suffers from a lack of definition that ought to be resolved before devising common solutions, regardless of their nature. Migration must be considered from a more optimistic perspective if decision-makers are to be persuaded. Migration should be approached as a human development issue, rather than strictly one of security. To promote a better understanding of the migration phenomenon, it must be considered under a comprehensive point of view. It is therefore necessary to:

- Perform an in-depth analysis of the linkages between forced migration in the wake of a crisis (climate events or conflicts), economic migration (to seek better living conditions) and poverty.

- Promote attenuating forced migration by developing local approaches based on solidarity and co-operation at various levels (international, South-South, North-South and North-North action).
- Draw up an inventory of knowledge and up-to-date data on migration mechanisms in arid areas, covering rural exodus, trans-Saharan migration and international migration.
- Better understand the linkages between degraded natural resources and migration, as in exploring the role played by land degradation and poverty in migratory flows.
- Analyse the impact of migration on rebuilding Saharan areas, to develop sound arguments to persuade decision-makers.
- Consider creating a research centre to develop and study the relationship between desertification and migration, evaluating post-migration situations in particular.
- Give priority in resource allocation to improving living conditions in arid areas, rather than combating migration.

In conclusion, regardless of the approach taken to highlight the linkages between migration and desertification, the need to develop well-founded, persuasive arguments to build conviction among decision-makers must not be neglected.

2 Macroeconomic costs of desertification

Recommendations

It is common knowledge that drought and desertification have adverse impacts not only on the environment, but also on the economy and thus on society as a whole. The question is whether all elements of this impact have been identified and quantified. In response to this question, participants considered the macroeconomic cost of desertification in particular. The discussion covered mainly the impact of desertification and soil degradation locally as well as at a distance, on the national and global economy – in other words, the cost of inaction.

The presentations made during the Workshop illustrated the results of recent studies performed by different organizations and researchers at different times, with different objectives and using different data. Unsurprisingly, the results are also very different; nor was there much exploration of off-site impacts.

Given this lack of a sound, complete and homogeneous methodology for analysis, participants wondered whether the international community might not better identify the macroeconomic costs of desertification. The answer was yes, since this would favour: (i) raising awareness of the importance of the problem of desertification and soil degradation and, as a result, (ii) political processes at every level, better informing responsible officials about the range of measures to adopt and the desirable response level.

To this end, the participants recommended that the scientific community join forces to prepare a common framework for a **comprehensive evaluation of the impact of desertification.** The framework should be designed so as to enable the countries to measure more accurately and systematically both positive and negative impact locally and at a distance.

To promote an improved awareness of the advantages of action, it was suggested that the cost of inaction be quantified in terms of opportunity costs or revenue losses. It was also proposed that macroeconomic impact be expressed not only as an absolute

value (e.g. in US dollars) but also in relation to other economic indicators, such as gross domestic revenue (GDR) or gross domestic product (GDP), and in terms of gross global product (GGP). The latter would encompass not only the aggregate impact of desertification at the national level, but also off-site, cross-border and trans-regional impacts.

Participants suggested that, in order to contribute to preparing this operating framework, pilot activities take place on relatively small areas (projects, for example) to provide reliable data and facilitate modelling and verification. Based on the results of these pilot studies, an attempt could be made to come up with national or global projections. It was noted, however, that estimates, averages and projections based on results obtained in a particular locale would be very approximate and might lead to gross oversimplification.

Completing the recommendations, a number of support measures were proposed, such as:

- Use a results-based approach.
- Build capacity for macroeconomic evaluation in the countries concerned.
- Set up and maintain reliable databases and systems for monitoring and evaluation.
- Strengthen networks within the scientific community (through the inclusion of economists).
- Disseminate and promote existing knowledge.

Workshop REPORT 2: 'ECONOMIC RATE OF RETURN AND OPPORTUNITIES FOR INVESTMENT'

1 ECONOMIC RATE OF RETURN

Recommendations

The presentations and discussions on analysing rates of return on investments in projects to combat desertification led to a general consensus on the need to:

- Analyse current methodologies and identify their limitations. In particular, results are contingent upon specific contexts and should not be generalized.
- Go beyond simply biophysical evaluations to quantify the off-site, economic, institutional and social impacts of projects to combat desertification.
- Give consideration to the time needed for operations to evaluate return on investment such that they are scientifically valid.
- Better understand the factors contributing to project success, differentiating macro (land tenure, market access) from micro aspects.
- Analyse the organizational components of projects that explain their success or failure, taking all stakeholders into account.
- Clarify the role of decentralization in moving from the project scale to a larger area.

It was also noted that:

- Land degradation is a current issue above all for the countries of the North, and large private-sector groups are investing cutting-edge resources, such as drought-resistant species. Hence, the need for public development aid to also cover these issues.
- There is a lag between when cost-benefit findings are produced and when they are taken into account in policies by national decision-makers and donors.

- Investments in combating desertification are not sustainable without robust social organization.

  Against this backdrop, the following questions arise:
- How to design analytical grids:
  - Cutting across social, environmental and economic contexts?
  - Valid at different scales and with different timing?
- Extending beyond donors' strategies at a particular juncture?
- Policies to provide aid and implement projects follow fashions and change from time to time. How can successes in previous projects be replicated? This underscores the issue of who will take over from the project locally.
- Are the successes, including those supported by quantitative studies, sufficient to make decisions on policies and donors? If not, what else is needed to make a convincing investment case?
- Finally, can work be done to combat desertification without explicit mention in integrated rural development projects, or must specific objectives be included?

2 OPPORTUNITIES FOR INVESTMENT

Recommendations

Several case studies were presented, all of which appear to be successes. All of the experiences presented were based on participatory, agro-ecological approaches and equitable supply chains. In most cases, they were one-off experiences in connection with a particular territory. Based on the presentations, the linkages between combating desertification and commercialization were discussed. Three points were highlighted:

- The need for producers to forge strategic partnerships among themselves on a meaningful scale, to better take advantage of market conditions and gain access to information needed for production. Capacity-building and organization are needed to this end.
- Identifying and establishing commercial supply chains for specific products in arid areas has enabled resources to be better managed. An understanding of the services provided by ecosystems can lead to them being more highly valued. In turn, commercial value can boost ecological value and can lead to the establishment of social and even cultural mechanisms for protecting resources.
- On the other hand, an infatuation with a particular supply chain on the part of producers can have adverse effects, such as the overuse of natural resources, competition between different actors and regions of the world and limited opportunities for local populations to access finished products as local prices rise.

Through these successful experiences, two main recommendations and several questions were formulated for research:

- Perform a preliminary inventory and survey of various experiences carried out in arid areas, analysing any problems and positive knock-on effects.
- Further explore the potential of remittances and how they can translate into productive investments in the rural economy, as well as their sustainability, in particular the inter-generational issue.
- What are the stages involved in establishing a supply chain, and in moving from the national to the international scale?

- What are the needs in terms of building capacity among producers to do so?
- What is the likelihood of moving to a larger scale of production for these local initiatives based on the same principles?
- How to identify constraints on global markets and competition, differentiating them from national and local constraints?
- What public policies would be needed to expand these initiatives: e.g. an enabling legislative, fiscal and commercial framework or labelling policy.
- Finally, how should investments in these sectors by donors and private parties be guided?

GENERAL Discussion ON REPORTS

ADOPTION OF REPORTS

The general discussion underscored several points raised in the adopted reports:

- With regard to migration, it is important **to have a solid grasp of the triggers of population movements;** to this end, the starting point is **a baseline,** then **an in-depth exploration of the relationship between land degradation, increasing poverty and migratory flows;** then consider ways of attenuating them, beginning with an improvement in living conditions in areas at risk. The conclusions of the Almeria Colloquium have yet to be implemented (for instance, a specific research centre on this issue).
- With regard to investment costs and opportunities, those present recognize that they are not yet well known but that **data and methods that can be used at the national level are needed.** In any case, identifying costs and success stories is not enough: they must be followed by specifying contexts, in the search for convincing arguments. Nor should other common issues be neglected, such as land tenure and water availability.
- It was recalled that the societies at risk have values to defend and comparative advantages to be developed, as mentioned in the Montpellier Appeal.

RESULTS OF THE ROUND TABLE

The round table provided an opportunity for several donors and private-sector representatives to express themselves. It was followed by a lively discussion on the participants' expectations of the Workshop.

GTZ (German Technical Co-operation Agency) presented its approach to analysing investment planning at the national level, based on changes in land use and resource use (water, vegetation, soil, considered as commodities) following adaptation, seeking to perform economic evaluations of natural resources and to justify the use of public aid. The Agency asked for the results of workshop discussions to be transmitted to the Intersessional Intergovernmental Working Group (IIWG) and the Convention's Committee on Science and Technology (CST).

The Swiss Co-operation Agency representative recalled that decision-makers have multiple priorities, such as civil security and energy supply, and wondered how our arguments could have any impact on them. She saw two obstacles: a lack of interest in rural and local development on the part of countries, and the fact that weaker ministries such as

environment ministries were unable to co-ordinate actions, such as integrated land management. She felt that the focus should be on land management rather than combating desertification, not a compelling term. She also felt that capacity-building was needed.

The French Development Agency (AFD) representative made a very eloquent presentation on the need to take into account natural capital, one of the pillars of sustainable development. Investing in natural capital yields an economic return, but also a high social return. Public aid priorities should therefore be rebalanced to assign the proper role to natural capital, without which the other kinds of capital will be degraded after a certain irreversible threshold is reached, which varies case by case. AFD is prepared to conduct cost-benefit analyses as needed to better substantiate this position.

The President of the **National Agro-Industry Federation of France** recalled that, in arid and semi-arid regions, when agronomic insecurity reaches a range of between 1 and 1.5, income insecurity will be between 1 and 3. Sustainable public policies are therefore needed, along with stability in fiscal matters and agricultural prices, as well as land tenure measures that could include privatization and biotechnological research on drought resistance. He noted the small size of markets in the countries concerned and called for action on intellectual property, labelling and quality.

The ensuing discussion raised those issues of greatest concern to ensure an enabling environment for investment in arid areas, including highly degraded areas. These issues are part of the overall question of how to develop common arguments that all those present could use in order to:

- Promote a stable legal and institutional environment in the countries.
- Develop institutional innovations to manage contradictions among set priorities.
- Research specific markets and opportunities for countries in arid areas.
- Arrive at a better balance between supply and demand for development aid, particularly from farmers.
- Move from focusing on stocks to focusing on flows.

FINAL CONCLUSIONS

At the end of the Workshop, five sets of proposals were put forward:

1. Methodologies

- The urgent need to determine the costs of inaction in each country at every level (local, national and regional).
- The importance of cost-benefit studies to support the argument for investing in sustainable land management. To this end, it is necessary to harmonize methodologies and design tools for analysis that encompass the social, environmental and economic contexts. These methodologies must be valid at various scales, times and places. These instruments should also include key elements contributing to past successes, differentiating macro from micro issues.

2. Communication

- The need to develop an efficient, clear and complete communication strategy with concrete arguments on various types of support, and disseminate it to all stakeholders in the form of information packages, CDs, a dynamic web site on knowl-

edge management in sustainable land management, successful experiences, success factors and guidelines for aligning all sectors of development.

3. Capacity-building

- Needed at the local, sub-national and national levels, on institutional, technical and organizational issues.

4. Policies

- Reduce the time lag between when economic studies are available and when they are taken into account by decision-makers.

5. Exchanges of information and experiences

- Set up an international network on the costs of inaction.

The participants recognize:

- **The interest in the concept of costs of inaction** and ask for methods to be put forward to assess national-level costs, so that states can perform their own estimates.
- **The need to revisit priorities,** in view of the need to invest in arid and semi-arid areas, which yields returns economically, socially and environmentally.

They agree that the following measures are needed:

- **Comprehensive arguments** in terms of resource management, including water and land tenure issues.
- **Cost-benefit analyses** of different sites, capitalizing on the results of success stories.
- A **shared framework** to synthesize and disseminate the results of cost-benefit analyses and success stories.
- **Holistic approaches** and inter-disciplinary linkages to make research more effective.
- Training for **farmers and managers of producers' organizations** and supply chains.

They underscore that:

- **Local stakeholders can represent themselves** and their situations and can conduct monitoring and evaluation activities themselves.
- **Stable public policies** must accompany any action by private operators.
- **Public/private partnerships** should be set up to pay for environmental services, rehabilitation of degraded space and prevention of further degradation.

On the question of creating an international network on the costs of inaction, the Workshop organizers propose the following terms of reference:

Network goals:

In the short term:

- Organize dissemination of Workshop results, as indicated in paragraph 2.
- Organize dissemination among network members of all existing studies on the economic and social costs of land degradation and desertification, both published and unpublished.

- Organize dissemination among network members of existing studies on economic rates of return and success stories.

In the medium term:

- Analyse current methodologies and propose one or more that could be applied at the national level, so that states may conduct their own evaluations of the costs of inaction.
- Develop a common line of reasoning (national public decision-makers, donors, operators and stakeholders in development) in favour of investing in arid areas.
- Compile the proposals put forward at the start-up workshop on cost-benefit analysis (World Bank, French Development Agency, Permanent Inter-State Committee for Drought Control in the Sahel); follow their evolution and then disseminate the results.

In the long term:

- Propose further cost-benefit analysis, propose research to improve studies on the costs of inaction, assist in seeking financing and actors to perform research.
- Develop a common line of reasoning (national public decision-makers, donors, operators and stakeholders in development) in favour of investing in arid areas.

To ensure dissemination of the workshop results, the Workshop organizers propose several kinds of products and dissemination to take advantage of opportunities in connection with, for instance, the Convention to Combat Desertification:

- **Drafting of a summary** note for participants in the Algiers Conference (19 – 20 December 2006) to the end the 'Year of Deserts and Desertification'.
- **Drafting of a note for the newsletter** of the Global Mechanism in December 2006.
- **Drafting of the workshop report** in English and French and available in mid-January 2007 to state members of IIWG (Germany, European Union President), with the list of participants. This report will be produced jointly by CSFD and the Global Mechanism, and they will translate it in early January. It will be distributed to all participants and all those having expressed a desire to receive it.
- **Production of a CD** containing all the texts used in workshop preparations and all communications during the workshop: including the basic workshop document, various studies on the cost of land degradation and the report on investments by the Global Environment Facility/Global Mechanism. This CD will be produced by CSFD with support from IFAD and the Global Mechanism, as well as assistance from Florida Atlantic University in compiling the studies.
- **The workshop CD and report will be distributed more widely on the occasion of the session of the Committee for the Review of the UN Convention to Combat Desertification (CRIC) to be held in Buenos Aires (March 2007) and the Conference of the Parties to the United Nations Convention on Biological Diversity to be held in Madrid (October 2007).**
- The basic document 'Investing in Arid Areas' and the Workshop Report will be included in **CSFD Working Paper N° 6,** in French and English, and published during 2007, accompanied by a one-page (A4 format, double-sided) summary.

In conclusion, all the participants appreciated the quality of the exchanges, in particular because of the broad diversity of skills and backgrounds, and wished to have an opportunity for further discussion.

The Workshop ended with concluding remarks by Ms. Estelle Godart of the Ministry of External Affairs of France and Mr. Christian Mersmann, Managing Director of the Global Mechanism.

Ms. Godart indicated that she was convinced of the importance of developing a common line of reasoning in favour of investing in drylands, as well as the need for multidisciplinary and multidonor approaches. She commended the Workshop's organizers and said that France's Minister of External Affairs was prepared to make further use of the Workshop's conclusions.

Mr. Mersmann expressed his gratitude to the organizers and welcomed the strategic and macroeconomic arguments developed, as well as the benefits of the actions undertaken and willingness to explain the importance of investing in drylands.

Footnote:

ESSC President José L. Rubio attended the Workshop and participated in the discussions and contributed to the conclusions. He also made a presentation in Session II (Social cost of desertification) entitled: 'Implications of desertification and migrations. The cost of inaction', which included a perspective of the main outputs from the 'II International Symposium on Desertification and Migration' (Almeria, Spain, 25 – 27 October 2006).

Investigating soil loss due to crop harvesting
European Commission DG ENV
News Alert issue 62 – April 2007

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Most soil erosion research focuses on soil loss caused by water, wind or tillage. However, significant amounts of soil could be lost from arable land during the harvesting of crops such as potatoes, sugar beet and chicory roots. In a recent study, a Belgian team of scientists investigated the variability of soil loss due to crop harvesting (SLCH) with various parameters, such as harvesting techniques, soil and crop characteristics and agro-ecological environment. Although there are no systematic differences in SLCH between crop types, the results suggest that soil moisture content at harvesting time is, besides harvesting technique, a key parameter affecting SLCH.

Soil erosion reduces the fertile top layer of the soil available for food production. As more than 99% of the world's food comes from the land, it is therefore of great importance to understand the mechanisms of soil erosion and to be able to predict its effects in order to preserve human food availability and the natural environment. Most soil erosion research focuses on soil loss caused by water, wind or tillage, but soil loss due to crop harvesting (SLCH) may vary from few to tens of tonnes of soil per hectare per harvest. On cropland, SLCH may thus be as important as other soil erosion processes and should therefore not be disregarded.

Previous studies on SLCH mostly focused on variability in similar environments or comparable harvesting techniques. In this study, a compilation of SLCH studies was made in order to investigate the effect of crop types (10 types considered), agro-ecological conditions (13 countries covering three continents) and harvesting techniques (mechanical or manual harvesting) on SLCH variability. Furthermore, field measurements and correlation models were used to assess the influence of these factors. Their results are as follows:

- Generally, manually harvested crops lead to lower soil losses than crops harvested by machines. For potatoes, this is explained by the fact that stable soil clods induce large variations in soil losses caused by mechanized harvest and are usually not exported off site when potatoes crops are harvested by hand.
- Soil moisture content is, besides harvesting technique, one of the most important factors explaining SLCH variability. Generally, SLCH increases positively and exponentially with soil moisture, but the effect of soil moisture on SLCH is not equal for all crop types.
- For many crop types, the soil-crop contact area could explain over 40% of the SLCH.

The authors conclude that these results give a first assessment of SLCH for various crops grown in different agro-ecological environments. However, more research is needed to test the importance of variables not included in the study, such as clay mineralogy and organic matter contents. A wider range of crop types also need to be taken into consideration.

Considering the order of magnitude of soil loss due to crop harvesting, SLCH should not be disregarded in soil erosion mitigation strategies. As this study provides valuable information on factors influencing SLCH variability in a range of contrasting agro-ecological environments, it could be seen as a valuable entry point for the design of strategies to reduce overall soil erosion by targeting SLCH.

Source: Ruysschaert G., Poesen J., Verstraeten G. and Govers G. (2007). Soil loss due to harvesting of various crop types in contrasting agro-ecological environments. Agriculture, Ecosystems and Environment 120, 153-165.

Contact: jean.poesen@geo.kuleuven.be
Theme(s): Agriculture, Soil.

DESIRE

A global initiative to combat desertification

Introduction

Twenty-eight partner institutions from across the world, consisting of research institutes, universities, NGOs, and SME's, started a large integrated research project on February 1st 2007, entitled DESIRE.

The project budget is over €9 million, and the project duration 5 years.

The DESIRE project aims to establish promising alternative land use and management conservation strategies in sixteen degradation and desertification hotspots around the world, based on a close collaboration of scientists with local stakeholder groups. This integrative participatory approach ensures the acceptability and feasibility of conservation techniques, as well as a sound scientific basis for the effectiveness at various scales. DESIRE employs a bottom up approach.

- degradation and desertification hotspots and stakeholder groups have been identified in all countries surrounding the Mediterranean, and in 6 external nations facing similar environmental problems,
- desertification indicator sets will be defined in a participatory approach and a harmonized information system will be constructed to organize socio-economic and geo-information data,
- new and existing conservation strategies will be defined with the stakeholder communities;
- these strategies will be implemented in the field, and monitored and modeled to quantify their effectiveness at various scales,
- the results will be extrapolated using indicator sets, geo-information data, and integrated modeling systems combining socio-economic and environmental aspects, and
- finally the results will be translated to a series of practical guidelines for good agricultural practices and environmental management, which will be disseminated to practitioners, agricultural extensionists, governmental authorities, policy makers, NGOs, land users, land owners, and local communities.

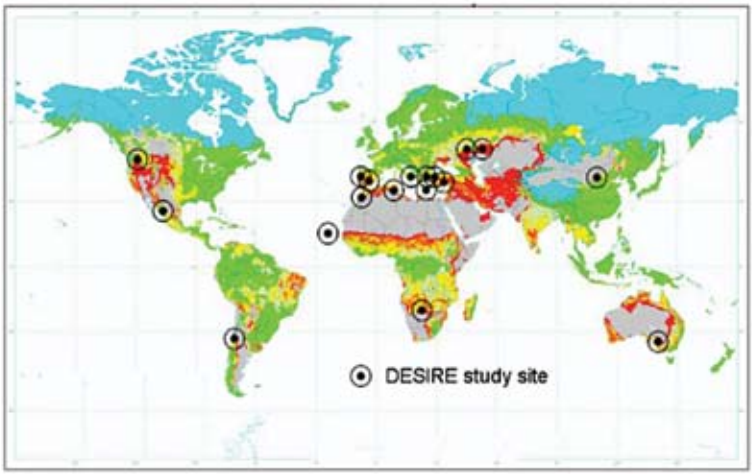
In order to achieve the goals mentioned in the introduction, the DESIRE IP has been divided into a logical series of interrelated Working Blocks (see figure below), each with specific goals, tasks and deliverables.

WB1 inventorizes the 18 hotspot target areas and organizes both spatial environmental data and socio-economic data of stakeholder groups. WB2 uses this information and available results from other EU projects to define and evaluate sets of desertification indicators. These indicators are tested for their efficiency in the monitoring phase in WB4 and used to organize the monitoring results into a framework. WB3 uses the information of WBs 1 and 2 to develop a series of conservation and remediation strategies in close cooperation with the stakeholders. These strategies are implemented in each of the hotspot areas in WB4 and their efficiency is measured and modeled over the course of several years. The goal of WB5 is to upscale the results of WB4 and model them on a larger scale, forecasting regional effects of combating desertification both in environmental and socio-economical terms. WB6 finally runs parallel to the other workblocks in that it designs a harmonized data information system to which all WBs contribute data, and organizes the dissemination of the results.

A Global Initiative

The DESIRE project encompasses a set of 18 study sites around the globe (see Figure below) that are affected by one or more desertification related problems. These areas have a different socio-economic context in the form of land use and management, and a different physical context in the form of climate and landscape. This gives DESIRE a truly global "laboratory" to apply both tested conservation and remediation measures, and find new and innovative approaches to combat desertification. One of the main challenges will be to merge the results into a methodological framework and harmonized database information system. This calls for a well structured approach.

Desertification Vulnerability



Hotspot area	Main Problem/ Desertification process
Guadalentin Basin, Murcia, *Spain*	Drought, soil erosion by water
Maçao, *Portugal*	Forest fires
Rendina Basin, Basilicata, *Italy*	Soil erosion by water
Crete, *Greece*	Soil erosion by water, overgrazing, water stress
Nestos Basin, Maggana, *Greece*	Salinisation
Konya Karapinar Plain, *Turkey*	Soil erosion by wind
Eskisehir Plain, *Turkey*	Soil erosion by water
Mamora/Sehoul, *Morocco*	Increasing pressure due to urbanization nearby
Zeuss-Koutine, *Tunisia*	Competition for scarce water resources
Djanybek, *Russia*	Poor vegetation growth
Novij, Saratov, *Russia*	Salinisation
Loess Plateau, *China*	Soil erosion by water and wind
Boteti Area, *Botswana*	Overgrazing and decreased flooding
Cointzio catchment, *Mexico*	Soil erosion by water
Walnut Gulch Watershed, *USA*	Vegetation change, flash floods
Glenelg Hopkins region, *Australia*	Salinisation, and sporadically bush fires
Secano Interior, *Chili*	Soil erosion by water, extensive gullying
Santiago Island, *Cape Verde*	Soil erosion, drought, flash floods

Project results and dissemination to stakeholders

- development of a Harmonised Information System (HIS) that will be the centre for comprehensively archiving, documenting and giving access to all the material collected, organized, and developed in DESIRE,
- dissemination of all information within the project, so that all partners can access the information,
- the HIS will be made internet based in a number of languages,
- construction of decision support tools to suggest "best management practices" as determined by research and testing in the study sites,
- preparation of guidance and training packages to enable facilitators to bridge the information gap between scientists and stakeholders in the partner countries,
- dissemination of the DESIRE products to the international community, in an international DESIRE conference and through special sessions at other conferences.

A global research initiative to mitigate desertification and remediate degraded land.

Project partnership

1 Alterra, *Netherlands*
2 Catholic University of Leuven, *Belgium*
3 University of Leeds, *United Kingdom*
4 University of Wales Swansea, *United Kingdom*
5 Centre for Development and Environment, University Bern, *Switzerland*
6 Estacion Experimental de Zonas Aridas, *Spain*
7 University of Aveiro, *Portugal*
8 CNR Research Institute for Hydrogeological Protection, *Italy*
9 Agricultural University of Athens, *Greece*
10 Eskisehir Osmangazi University, *Turkey*
11 University of Mohamed V, Chair UNESCO-GN, *Morocco*
12 Institut des Regions Arides, *Tunisia*
13 Institut for Soil and Water Conservation, *China*
14 Wageningen University, *Netherlands*
15 Democritus University of Thrace, *Greece*
16 Both ENDS, *Netherlands*
17 ISRIC, *Netherlands*
18 Escola Superior Agrária de Coimbra, *Portugal*
19 CARI, *France*
20 University of Botswana, *Botswana*
21 ITC, *Netherlands*
22 IRD, *France*
23 Cornell University, *USA*
24 Deakin University, *Australia*
25 MEDES, *Italy*
26 MSUEE, *Russia*
27 INIA, *Chili*
28 INIDA, *Cape Verde*

→ Contact address: ALTERRA, Soil Science Centre / Coen Ritsema, P.O. Box 47 • 6700 AA Wageningen, The Netherlands
Phone: +31 317 48 65 17 • Fax: +31 317 41 90 00 • Email: Coen.Ritsema@wur.nl • www.desire-project.eu

DESIRE
A global initiative to combat desertification

Editor's note:
The citation details of Ph.D. theses by ESSC members since and including 2004 have been added as an additional page to the ESSC web site. To date, 33 Ph.D. theses are quoted. On the ESSC web site, please look under 'Publications'. Please forward the citation details of any additional Ph.D. thesis completed since the year 2000 by an ESSC member to any of the Editorial team. We will then add the thesis citation details to the web site.

Three new Ph.D. theses are reported in this issue.

The following is the abstract of one recent Ph.D. thesis from the Faculty of Agronomical Sciences in Gembloux (Belgium). The subject of this thesis has was since been developed into a recently published book.

For further information, please contact:
Professor Dr ir Laurent Bock
Laboratoire de Géopédologie
27 Avenue du Maréchal Juin
B 5030 Gembloux
Belgium

Tel: 00 32 81 622542
Fax: 00 32 81 614817
E-mail: bock.l@fsagx.ac.be

Marc STALJANSSENS
Faculty of Agronomical Sciences of Gembloux

The Critical Pathway to Sustainable Development: from Framework Concept to Conceptual Framework (2005), 628 pp.

Abstract

The dissertation is the result of the author's long personal reflection and experience with the design and application of an integrative concept for sustainable development. First, a theoretical part draws the line between paradigms, methodologies, techniques and instruments that are brought forward by individual disciplines and schools, in order to identify the basic components of an integrative concept for natural resource management. Second, the components are described and discussed in detail. Third, a review is made of the conditions, requirements and limitations relevant to the practical implementation of the concept in the design of a suitable custom-

tailored conceptual framework for the solution of issues and problems in any local situation.

The major components of the concept are the Boundaries and Boundary Conditions, Problems and Issues, Objectives and Concerns, Interaction and Sustainability Issues, Alternatives, Preferences, Evaluation and Inference, and overall Communication Processes. Although this list of components may seem to follow a certain logical progression, it should not be perceived as a stepwise procedure, even with the provision of feedback loops at any level.

The tools required or useful for the implementation of the approach are numerous, as are the disciplines involved. The approach makes it possible to initiate an operational problem-solving process that responds to the needs of every stakeholder. It enables the co-ordination and integration of relevant available expertise, while avoiding lengthy and costly data collection or planning exercises.

Résumé

La dissertation dresse le bilan de nombreuses années de réflexion et d'expérience dans l'application d'un concept pour le développement durable. En premier lieu, dans la partie théorique, un certain recul est pris par rapport aux paradigmes, méthodologies, techniques et instruments préconisés par l'une ou l'autre discipline ou école, afin d'identifier les éléments à la base d'un concept intégrateur pour la gestion des ressources naturelles. Ensuite, ces éléments sont décrits et commentés en détail. En conclusion, les conditions, les exigences et les limitations rencontrées dans l'application pratique du concept à la création d'un ensemble de procédures adaptées permettant la solution des problèmes au niveau local sont inventoriées.

Les éléments de base du concept sont les Limites et Conditions aux Limites, les Problèmes et Questions Graves, les Objectifs et Préoccupations, les Questions d'Interaction et de Durabilité, les Alternatives, les Priorités, l'Evaluation et l'Inférence, et enfin les Processus de Communication. Bien qu'il soit possible d'attribuer à cette liste une certaine progression logique, il serait illusoire d'y voir les étapes obligées d'une procédure même en y prévoyant la possibilité d'itérations entre tous les niveaux.

L'application de cette approche requiert ou peut profiter de l'utilisation des instruments et techniques les plus divers comme le sont les disciplines impliquées. Elle permet la mise en route d'un processus opérationnel de résolution des problèmes qui réponde aux besoins des divers acteurs. L'approche assure la coordination et l'intégration de l'expertise pertinente disponible tout en évitant de longues et coûteuses opérations de collecte de données ou de planification.

E-mail: marc.staljanssens@aigx.be

The subject of this thesis was also developed in the recently published handbook for students and trainees (for ordering, please contact the author). The citation details are:

The Critical Pathway to Sustainable Development: from Framework Concept to Conceptual Framework - A reference book on the implementation of an integrative concept of proactive decision-making in area-based land or sea resources management (2005), 336 pp. (ISBN-10: 90-9021064-4, ISBN-13: 978-90-9021064-3).

MAI VAN TRINH
WAGENINGEN UNIVERSITY, THE NETHERLANDS.

SOIL EROSION AND NITROGEN LEACHING IN NORTHERN VIETNAM: EXPERIMENTATION AND MODELLING (2007). PH.D. THESIS, WITH SUMMARIES IN DUTCH AND VIETNAMESE, 182 PP. (ISBN: 90-8504-605X).

Abstract

Two years research has been conducted in Tam Duong District, Vinh Phuc Province, upstream in the Red River Delta in northern Vietnam, comprising three geographical regions, i.e. mountainous areas, terraces in hilly land and flat land. The extent of soil degradation in the District was delineated using the red/near-infrared band ratio of satellite images, calibrated on the basis of soil maps and field checks. Results showed strong dynamics in soil degradation with the largest area of degraded soil of 3 280 ha in 1992, associated with a substantial reduction in forest cover and expansion of the agricultural area from the mid- 1980s. Subsequently (1996), re-forestation, particularly planting of eucalyptus plantations, led to a reduction, followed (2000) by expansion again, as a consequence of harvesting of production forests.

In the mountainous and hilly areas, soil erosion is the dominant degradation process, very severe at individual plot scale, but far less at sub-watershed and watershed scales (i.e. measured soil losses over eight events, with the same total rainfall, were 1 360 and 773 kg ha^{-1} in a cassava and an eucalyptus plot, while it was 45 in the sub-watershed and 125 in the main watershed). Performance of the soil erosion model LISEM was evaluated in the study area; results showed differences in performance at different spatial scales. In the main watershed, simulated total runoff and soil loss were underestimated, because of storage and release in terraces and rice fields. In the upland sub-watershed, total soil loss was overestimated due to overestimation of sediment concentration, as a result of high detachment and transport capacity.

In addition to soil erosion from the terraces, nitrogen leaching from the root zone in these sandy soils contributes to negative environmental impacts on agriculture. A nitrogen balance model was developed, and calibrated on the basis of measured soil nitrogen concentrations in different cropping systems. Results from the model showed increased nitrogen leaching with increasing fertilizer doses, i.e. in a rice-rice-maize rotation, the traditional land use pattern in the district. Annual nitrogen leaching losses varied from 52 – 60 kg ha^{-1}, 56 – 114 kg ha^{-1} and 58 – 154 kg ha^{-1} for low, intermediate and high fertilizer inputs, respectively. In the lowlands, agriculture has diversified and intensified, and high value crops are cultivated with very high doses of fertilizer. In these cropping systems, nitrogen leaching is particularly high. Annual leaching losses were calculated of up to 193 kg ha^{-1} in flowers and 115 kg ha^{-1} in vegetables compared to about 50 kg ha^{-1} in rice.

From a set of point measurements, spatial distributions of nitrate- and ammonium nitrogen for a small region were predicted, using regression block kriging. The method was based on a stepwise backward linear regression, combined with expert knowl-

edge, taking into account the weighted influences of various explanatory variables, i.e. elevation, soil type and land use. Temporal variability in nitrogen concentrations in the groundwater was mainly the result of variations in rainfall and land use, characterized by different irrigation and fertilizer regimes.

For exploration of the consequences of introduction of alternative land use types and crop management, a spatial dynamic model was developed to simulate nitrogen dynamics at the scale of a sub-region, consisting of a mosaic of different soil and land use types. The model was calibrated and validated on the basis of two years of measured mineral nitrogen (both NO_3 and NH_4) concentrations under different land use types with different irrigation and fertilizer regimes. Simulated results showed annual leaching losses varying from 88 – 122 kg N ha^{-1} in flowers, 64 – 82 in vegetables of the 'cabbage group' (i.e. paprika, cabbage, eggplant, kohlrabi), 51 – 76 in chilli, 56 – 75 in vegetables of the 'squash group' (i.e. cucumber, tomato, pumpkin) and 36 – 55 in rice. The model, after further calibration and validation, is a useful tool for regional environmental assessment, and management support.

The study has indicated that current agricultural developments in Tam Duong District that are strongly influenced by (short-term) economic drivers, present a serious threat for the quality of the natural resource base, particularly soil and water and thus for the sustainability of production systems. The obvious conflicts between the various objectives need to be addressed through integrated analysis in which the various stakeholders are involved.

Keywords: Soil degradation, remote sensing, watershed, soil erosion model, paddy fields, terraces, water balance model, nitrogen balance model, geostatistics, rice-based systems, spatial dynamic model.

E-mail: TrinhVan.Mai@wur.nl

Sophie COOPER
Cranfield University

The role of conservation soil management on soil and water protection at different spatial scales (2007), 306 pp.

Abstract

Agriculture has a direct impact on the soil environment, altering soil properties, surface characteristics and erosion risk. This has led to a move away from conventional tillage to the adoption of conservation practices, aiming to minimize soil disturbance and reduce erosion. The effectiveness of this has been shown in studies from the USA, but equivalent research in Europe is limited.

The present study investigated losses of soil, water, nutrients and carbon from different tillage regimes. Two UK sites were used – Loddington (Leicestershire, on heavy clay) and Tivington (Somerset on sandy clay loam). Three cultivations were applied – conven-

tional (deep, inversion ploughing), and two forms of conservation tillage – SOWAP (non-inversion, shallow tillage), and Farmer Preference (non-inversion, deep tillage). Treatment effects were investigated at three spatial scales, ranging from field based erosion plots (0.05 ha), to micro-plots (1.5 m^2), to soil aggregate tests.

Results from 2004 to 2006 showed that adoption of conservation tillage did not consistently reduce losses of soil, water, nutrients and carbon, due to high temporal variability. Notable differences were found between sites. Runoff coefficients ranged from 0.39 – 0.46% at Loddington, and 2.43 – 3.82% at Tivington. Soil losses at Loddington were below 2 t ha^{-1} y^{-1}, but higher at Tivington (3.47 t ha^{-1} y^{-1}). Conservation tillage led to notable changes in soil properties and surface characteristics, including a decrease in bulk density and increases in organic matter, micro-topography and residue cover.

Absolute values of erosion from small-scale investigations could not be extrapolated directly to field scale results. Relative treatment ranks gave better comparisons, although results were not consistent for all small scale methods, due to high levels of variability. Caution should be used when extrapolating between spatial scales.

Further work is required to understand the links between temporal and spatial fluctuations in soil, surface and rainfall characteristics and erosion processes.

E-mail: sophie_cooper2003@yahoo.co.uk

Editor's note:

At the ESSC Council meeting in Lleida (Spain) in September 2006, the interactions between the ESSC and younger soil scientists were discussed (see Newsletter 2006/3, p. 5-8). It was decided that the ESSC should be more proactive in its support of younger scientists. As part of that initiative, we would welcome articles from both Ph.D. researchers and supervisors. We would like to hear from recent Ph.D. graduates; what advice and experience do you have which you would like to share with your colleagues in earlier stages of their research? We would also like to hear from current Ph.D. researchers; what are the factors which both encourage and limit progress? What are the particular challenges facing part-time Ph.D. researchers? We also invite contributions from experienced Ph.D. supervisors. What experience would you like to share with less experienced colleagues? In short, please tell us "what I know now, which I wish I knew then!"

CONFERENCE REPORTS

International Conference on 'Forest Fires, Climate Change and Soil Properties,' Barcelona (Spain), 31 January – 3 February 2007

Fires are a permanent characteristic of the Mediterranean forest environment. They have long been present and probably will remain an enduring menace. However, in the last three decades an abnormal intensification in the extent and number of forest fires has greatly exacerbated the trend.

In Spain, this increase started in the 1970s and reached its peak in 1994. This year, in the Valencia Community alone, some 100,000 hectares of land were burned. After this zenith, a decrease has been recorded, not in the number of fires (the number is still generally increasing), but at least in the extent of burned areas. This pattern is applicable to the whole European Mediterranean region. However, this relatively positive trend often shows frequent serious situations, usually every summer, scattered in different zones. Everybody remembers the dramatic images on TV news of the wildfire impacts in Portugal in the summers of 2003, 2004 and 2005. Recently, in August 2007, Galicia suffered a drastic situation, with thousands of uncontrolled fires menacing cities, roads and rural settlements.

This panorama is not restricted to the Mediterranean. Wildfires are a global environmental problem. The year 1998 was named by the WWF as *"the year when the world burned."* During this year, one of the hottest in the past century, droughts and desiccation affected vegetation and soil in many parts of the world owing, supposedly, to the consequences of the El Niño phenomenon. In total, around 10,000 million hectares caught fire this year, many of them in the USA, South Asia and Indonesia.

In understanding the dynamics of wildfires, there are clear climatic implications, as demonstrated in the year 1998 and other drought periods in different regions and occasions, for example in Spain. Dry environmental conditions, tinder-dry vegetation and hot

and desiccating winds are a dramatic combination, which initiate and rapidly propagate fires, leaving little possibility to control them. Therefore, together with fire impacts, we must also consider the implications of the climatic warming trend. Probably the influence of climate change in drylands will exacerbate the problems of wildfires. The recent IPCC Report (February 2007), indicate worse predictions than in previous reports. The future looks bleak, owing to the probable synergies between aridification trends and increased fire risk.

We have challenges ahead. The scientific and academic community can help and contribute in ways that are appropriate and coherent with our mission and activities. That is, providing information, facts and knowledge on the many aspects and circumstances involved in forest fire episodes. We should increase knowledge of the process itself, of its direct environmental effects and its socio-economic consequences and costs.

To develop adequate policies of prevention, extinction and restoration, we need to know in depth the processes, its evolution and the responses of affected areas. When we have reliable scientific information and we understand the processes involved, we are in a better position to mitigate, or at least to improve, management of the impacts and consequences.

The increase of scientific knowledge was the objective of the Conference: 'International Meeting of Fire Effects on Soil Properties', held in Barcelona from 31 January – 3 February 2007 and scientifically supported by the ESSC. In the Meeting the intricate and complex interactions of soil and fire were thoroughly presented and discussed. Soil organic matter changes, soil-water implications, nutrients dynamics, micro-organism behaviour, structural stability, soil erodibility, hydrophobicity and related aspects have been discussed through presentations from participants from the five continents in a truly global perspective.

The Barcelona Meeting, and in general the results and experiences coming from projects and studies related to wildfire effects on soil, is a valuable contribution we can offer to planning agencies and society in general. We should contribute with better information on the intrinsic characteristics of fire, vegetation behaviour, alterations of soil properties and hydrological modifications, fire propagation patterns, relation to climatic conditions and relation to geomorphologic processes. Such information will allow us to model and predict fire behaviour and, consequently, will improve our capacity to successfully manage the impacts of forest fires. This is a significant input from the ESSC and the ESSC will assist in information dissemination as a contribution to mitigating the future negative scenarios we face in the predictions of climate change and forest fire impacts.

José Luis Rubio
Centro de Investigaciones sobre Desertificación-CIDE (CSIC)
Valencia, Spain.

Editor's note:
A review of the Barcelona Conference will be reported in Newsletter 2007/3.

Evaluation of zones sensitive to groundwater pollution by nitrates in the Valencian Community. By José Luis Rubio, Vicente Andreu and Eugenia Gimeno (2006). Published by Centro de Investigaciones sobre Desertificación (CIDE, CSIC-UV-GV), Valencia (Spain), 165 pp. (ISBN: 84-611-0600-8).
(A free copy is available on request to CIDE).

The Valencian Community is one of the main Spanish regions in N-fertilizer consumption in irrigated agriculture. Some 25% of the land surface is devoted to fruits (especially citrus) and horticultural crops. As much as 75% of the irrigated surface is supplied with groundwater, which also caters for about 62% of urban demands. If we consider that water constitutes the main limiting factor for social and economic development in the Valencian Community, and that groundwater resources are especially vulnerable to pollution by nitrates (which, in turn, are essential to maintain agricultural productivity), this publication is a very welcome contribution. The Book gives an important methodological approach to evaluate the susceptibility of the Valencian territory to pollution by nitrates, including hydrological, geomorphological, soil and soil use factors.

An exhaustive review of the general characteristics of the territory as related to the groundwater sensitivity to pollution and the N cycle is made by the authors. The review emphasizes N outputs from the system, as soluble nitrates, because of their agro-environmental implications. Further on, a methodological design, based upon the integration of several thematic layers using GIS and cartographic model techniques, is used to divide the territory in terms of sensitivity to groundwater pollution.

The obtained results are clearly presented. The severity of groundwater pollution is examined in terms of nitrate contents, the origin of samples (e.g. wells, fountains and rivers), the geographic origin (coastal or inland areas), and by sectors, presenting the results as a sequence of maps. Groundwater sensitivity towards nitrate pollution is also shown on a cartographic base, achieving an excellent adjustment between these representations and the spatial distribution of nitrate values measured by municipalities.

To summarize, this is an excellent publication, coming from the acknowledged expertise and research experience of the authors, which undoubtedly shall be of interest for the Valencian Community. The work will also be extremely useful in other areas of application, because of the broader applicability of the methodological approach used.

Antonio Rodríguez Rodríguez
University of La Laguna
Canary Islands
Spain

The following book was published recently:

K. Helming, J.L. Rubio and J. Boardman (Eds) 2006. *Soil Erosion across Europe: Research Approaches and Perspectives.* Catena 68 (Special Issue).

RECENT PUBLICATIONS BY ESSC MEMBERS

We are including the citation details of papers and books produced by ESSC members. This is providing a growing resource for exchange of valuable information to both research and teaching. The cumulative citation list is being added to and updated on the ESSC web site. Students of ESSC members (both undergraduate and postgraduate) are increasingly accessing this facility in their literature searches. Please e-mail the citation details of papers in international refereed journals since and including the year 2000 to any member of the Editorial team.

As mentioned in the report on recent Ph.D. theses, the citation details of Ph.D. theses by ESSC members since and including 2004 have been added as an additional page to the ESSC web site. To date, 33 Ph.D. theses are quoted. On the ESSC web site, please look under 'Publications'. Please forward the citation details of any additional Ph.D. thesis completed since 2000 by an ESSC member to any of the Editorial team. We will then add the thesis citation details to the web site.

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Appointment of New Ph.D. Research Students

Miss Cathelijne Stoof (BSc and MSc Wageningen University) has been appointed as a Ph.D. research student at Wageningen University, The Netherlands. Her project entitled 'Fire effects on soil water movement' is embedded in the recently commenced EU Project DESIRE. Cathelijne will perform her fieldwork in Portugal and will develop a hydrological model for a small catchment affected by fire. The Director of Studies is Professor Coen J. Ritsema (Wageningen University) and the second supervisors are Dr António Dinis Ferreira (Escola Agrária de Coimbra, Portugal) and Dr Stefan Doerr (University of Wales, Swansea, UK).

E-mail: Cathelijne.Stoof@wur.nl

Miss Jantiene Baartman (BSc and MSc Wageningen University) has been appointed as a PhD research student at Wageningen University, The Netherlands. The title of her project is: 'Natural and human-induced erosion: combining short-term event-based research and landscape evolution modelling". It is embedded in the EU-project DESIRE and will be conducted in Spain and Mexico. The Directors of Studies are Professor Dr Coen J. Ritsema and Professor Dr Ir. Tom Veldkamp (Wageningen University). The second supervisors are Dr Jeroen M. Schoorl (Wageningen University), Dr A. Solé Benet (Estación Experimental de Zonas Aridas, Almeria, Spain) and Dr C. Prat (Universidad Nacional Autónoma de México, Mexico).

E-mail: Jantiene.baartman@wur.nl

Editor's note
Please see the report on the DESIRE Project included in this issue of the Newsletter.

Institutional movements and promotions of ESSC members
None reported.

ESSC membership List and Contact Details

The full ESSC membership details are reported in ESSC Newsletter 2005/1. These details are also held on the ESSC web site. Under 'members' you can get a full listing. Also under 'members' you can click on any member country and find a listing of members in the selected country.

We are trying to keep the membership list on the web site up-to-date. Please check your details and let us know if there are any necessary correction(s). If your details change, also please let us know. Please send updated information to Zuzana Tekelová at:

E-mail: tekelova@vupu.sk

Elections of the ESSC Council 2007 – 2011

The following regulations are based on the ESSC Statutes and on the rules laid down by the first ESSC Council, as well as the Council for the period 2004-2007.

Regulations

Every European country with five or more members of the ESSC may be represented on the Council. Those countries with 20 or more members of the ESSC may be represented by two council members.

The Executive Committee of the ESSC hereby publishes the call for nominations.

Every ESSC member may nominate either him/herself or other members as a candidate. Nominations must be sent in writing to the Secretary of the ESSC by 30 May 2007.

Professor Dr Pavol Bielek
Výskumný ústav pôdoznalectva a ochrany pôdy
Soil Science and Conservation Research Institute
Gagarinova 10
827 13 Bratislava
Slovakia.

e-mail: bielek@vupu.sk
tekelova@vupu.sk

The list of nominated candidates for each country will be published on an ESSC Notice Board at the International Congress to be held in Palermo, 28 – 30 June 2007.

Elections for the Council will be organized at the ESSC General Assembly in Palermo during the ESSC Conference. Elections will be conducted in the following way:

1. The Council members for each country will be elected by the ESSC members of that country who are presented at the General Assembly.
2. If only one candidate (or two candidates in the case of those countries eligible for two members of Council) has been nominated as a country's representative on Council, that (those) candidate(s) will be the elected member(s).
3. If no members from a country are present at the General Assembly, the Assembly will elect a representative for that country from the list of nominated members.
4. In addition to the country representatives on Council, the former Council will nominate up to six members to serve on the new Council.
5. After the country elections have been held, the complete list of members for the

new Council will be presented to the General Assembly for ratification. The Assembly will decide to accept or reject the new Council in its entirety by a simple majority of votes.

6. The Council has the right to co-opt additional representatives on Council in the period between General Congresses.
7. No country can have more than four members on Council.

Duties of members of the ESSC Council

1. Contribute to the collective wisdom of the Council in reaching decisions on matters relating to the Society.
2. Promote the Society within their country, e.g. encouraging new members and publishing its activities.
3. Report to the President on activities within their country which are important to the Society and its members.
4. Attend Council meetings.

Before standing for Council, candidates should ensure that they have sufficient time to engage in these activities and that they have sufficient funds to attend most Council meetings (held annually). It is very important that the Society has an active Council.

Deadline for nominations: 30 May 2007.

Web Based Bulletin Board

The ESSC wishes to rapidly disseminate information to its members. Please forward information to the ESSC web site to be placed on our ESSC Bulletin Board. These could include searches for potential collaborators for research proposals, calls for research proposals, job opportunities, opportunities for research studentships, impending conferences and other items of important information for rapid dissemination. Of course, we will also continue the regular circulation of information via our Newsletter. The ESSC web site is:
http://www.essc.sk

FORTHCOMING DATES FOR YOUR DIARY

FIRST ANNOUNCEMENTS

Meeting on 'X-ray Computed Tomography of Soil', 19 – 22 August 2007, University of Guelph, Guelph, Canada

Meeting on 'X-ray Computed Tomography of Soil', 19 – 22 August 2007, University of Guelph, Guelph, Canada

As evidenced by the number and diversity of research projects reported in technical fora during the past decade, there is growing interest in the study of intact soil using x-ray computed tomography (CT). While early work focused on soil structure and hydraulic properties, there have also been attempts to apply this technique to other sub-disciplines in soil science. At the same time, considerable evolution has occurred in x-ray micro-CT scanners and computerized image data processing systems. A recent review of research published during the past 5 to 10 years involving x-ray CT scanning of soil, has revealed the need for a thorough discussion of the application of x-ray CT to soil. Of particular concern is the diversity of approaches to the acquisition and processing of CT imagery of soil.

Accordingly, a Meeting, entitled 'X-ray Computed Tomography of Soil', will be hosted at the University of Guelph in Guelph, Canada, from 19 – 22 August 2007. This Meeting has received the endorsement of Commission 1.1 of the 'International Union of Soil Science', the 'Micromorphology Committee of the Soil Science Society of America', as well as the 'Canadian Society of Soil Science'. Preliminary contact has also been made with Elsevier (specifically Geoderma), with the intention of generating a publication dedicated to the works presented at this meeting, including the outcome of any discussions focused on the development of recommendations for standardizing approaches.

The tentative agenda for this meeting is as follows:

19 August: Arrival of participants, Official Opening.

20 August: Voluntary Technical Sessions (Oral and Poster), to be held consecutively: 'Soil Physical Properties', 'Soil Composition', 'Soil Biological Activity' and 'General Methodology'.

21 August: Keynote speaker on the 'science of x-ray computed tomography', complemented by presentations from representatives of mainstream manufacturers of micro-CT instruments. Keynote speaker on the 'science of 3D digital image processing', complemented by presentations from representatives of mainstream manufacturers of computer and data storage systems (especially as they relate to digital imagery).

22 August: Group and plenary discussions on issues related to the acquisition and processing of CT imagery of soil and the formulation of recommendations.

With this notification, interested researchers are asked to indicate their intention to contribute by sending an e-mail (containing title, preferred mode of presentation (oral or poster), preferred technical session, authorship and affiliation of authors, as well as full contact information of the presenting author) to Dr Richard J. Heck (University of Guelph). Further details will be sent once titles are received. For further information, please contact:

rheck@uoguelph.ca

15TH INTERNATIONAL CONGRESS OF THE INTERNATIONAL SOIL CONSERVATION ORGANIZATION (ISCO): 'SOIL AND WATER CONSERVATION, CLIMATE CHANGE AND ENVIRONMENTAL SENSITIVITY' 18 – 23 MAY 2008, BUDAPEST, HUNGARY

Invitation

The Organizing Committee is pleased to invite you to attend the 15th Conference of the 'International Soil Conservation Organization' (ISCO) to be held in Budapest, Hungary, from 18 – 23 May 2008. The theme of the 15th Conference of ISCO is **'Soil and Water Conservation, Climate Change and Environmental Sensitivity'.**

This topic will attract a wide range of experts, including scientists, university lecturers, policy makers and stakeholders from public and private institutions and non-governmental organizations throughout the world.

Hungary has a long and rich history of soil conservation, mainly because of salinization problems on the Great Hungarian Plain. The Country belongs to Eastern-Central Europe, where the change of regime after 1989 seriously affected soil and water conservation. The central part of Hungary is very sensitive to environmental change, especially to extreme events like drought and flooding. Therefore, it provides excellent case studies for the theme of the Conference. Climate change is manifested in the growing frequency and greater amplitude of extreme events. Hungary provides good examples for a range of soil conservation problems and practices, including soil erosion by water and wind, salinization, compaction and water management problems of heavy soils. Research institutes, university departments and the soil conservation service network have been dealing with soil and water conservation problems for many decades, offering and ensuring solutions for these problems. Four days of oral and poster presentations and a mid-conference excursion will make the Conference an event always to be remembered for participants making contributions as presenters or participants of the discussions.

We are looking forward to welcoming you in Budapest in May 2008 at the 15th ISCO Conference.

Conference topics

- Climate change and environmental sensitivity.
- Land use change.

- Water management.
- Soil erosion.
- Salinization.
- Desertification.
- Other land degradation processes.
- Soil rehabilitation and management.
- Socio-economic aspects of land degradation.
- Legislative and institutional aspects of soil and water conservation.

Abstract submission

All interested persons are invited to give oral or poster presentations. In order for presentations to be included in the programme, it is required that at least one of the authors is registered at the Congress by the pre-registration deadline of 30 November 2007.

Venue

Budapest Congress and World Trade Centre (H-1123 Budapest, Jagelló út 1-3): http://www.bcc.hu

Conference languages: English, French

Conference fees

Registration fee

- Pre-registration until 30 November 2007 **€ 390**
- Normal Registration from 1 December 2007 **€ 490**

Conference dinner **€ 60**

Conference dinner for your accompanying person can be ordered and paid on site. Participation fees of the pre- and post conference tours will be given soon.

Deadlines

Deadline for receipt of abstracts	30 June 2007
Notice of acceptance of abstracts	30 September 2007
Deadline for registration at reduced fee	30 November 2007
Deadline for receipt of papers	30 November 2007
Deadline for registration	30 November 2007
Publication of preliminary programme	15 March 2008.

For further detailed information, please see the ISCO 2008 web page: http://www.isco2008.com

EUROSOIL 2008
25 – 29 August 2008, Vienna, Austria

This is a co-operative activity between the 'European Confederation of Soil Science Societies' (ECSSS) and the soil science societies of Austria, Croatia, the Czech Republic, Hungary, Slovakia, Slovenia and Switzerland.

EUROSOIL 2008 will comprise about 30 Symposia, four Workshops and numerous 1 to 3 day excursions in: Central, Eastern, Southern and Western Europe.

More information can be obtained from the website of the European Confederation of Soil Science Societies (ECSSS):

http://www.ecsss.net

or e-mail: winfried.blum@boku.ac.at

SECOND ANNOUNCEMENTS

International Conference on Forest Soil Science: Results, Issues, Prospects, 4 – 11 September 2007, Syktyvkar, Russia

You are cordially invited to attend the International Conference on 'Forest Soil Science: Results, Issues, Prospects', which will be held in Syktyvkar (Komi Republic, Russia) between 4 – 11 September 2007.

MAIN CONFERENCE TOPICS

1. Genesis and classification of forest soils.
2. Soil cover structure in forest ecosystems. Spatial heterogeneity of forest soils.
3. Natural and anthropogenic change (evolution) of forest soils.

4. Soil biota and its role in forest biogeocenosis dynamics.
5. Soil organic matter - basis for stable functioning of forest ecosystems.
6. Forest exploitation and ecological problems.

OFFICIAL LANGUAGE

The working languages of the Conference are Russian and English.

SCIENTIFIC COMMITTEE

Professor A.S. Vladychensky – **Chair** (Russia); Academician of RAS G.V. Dobrovolsky – **Co-chairman** (Russia); Professor I.V. Zaboeva – **Co-chairman** (Russia).

Members: Prof. S.A. Shoba (Russia), Prof. L.O. Karpachevsky (Russia), Prof. Eleonora Bonifacio (Italy), Doctor of Biology G.A. Simonov (Russia), Prof. N. Dinev (Bulgaria), Prof. I. Kisich (Croatia), Doctor of Agricultural Science V.D. Tonkonogov (Russia), Doctor of Agricultural Science, Prof. N.G. Fedorets (Russia), Doctor of Biological Science V.F. Vedrova (Russia), Doctor of Biology L.S. Shugaley (Russia), Doctor of Biology B.R. Striganova (Russia), Prof. S.N. Chukov (Russia), Prof. V.O. Targulian (Russia).

ORGANIZING COMMITTEE

A.I. Taskaev – Chairman (Institute of Biology, Komi Scientific Center, Ural Division of RAS, Syktyvkar); E.M. Lapteva – Co-chairman (Institute of Biology, Komi Scientific Center, Ural Division of RAS, Syktyvkar); A.P. Borovinskikh – Co-chairman (Ministry of Natural Resources and Environmental Control of the Komi Republic (Syktyvkar)); D.A. Kaverin – Secretary (Institute of Biology, Komi Scientific Center, Ural Division of RAS, Syktyvkar).

Members: V.D. Obukhov (Forest Agency of the Komi Republic (Syktyvkar)), V.A. Beznosikov, A.A. Kolesnikova, S.V. Zagirova, K.S. Bobkova, E.D. Lodygin, A.N. Panukov, A.V. Pastukhov, A.A. Dymov (Institute of Biology, Komi Scientific Center, Ural Division of RAS, Syktyvkar).

ORGANISERS

- Russian Academy of Sciences, Institute of Biology, Komi Scientific Center, Ural Division of RAS (Syktyvkar) V.V. Dokuchaev Association of Soil Scientists (Moscow).
- Moscow State University, Faculty of Soil Science (Moscow).
- Ministry of Natural Resources and Environmental Control of the Komi Republic (Syktyvkar).
- Forest Agency of the Komi Republic (Syktyvkar).

PUBLICATIONS

A book of abstracts will be published. The proceedings will be issued after the Conference. The Organizing Committee is responsible for the selection of materials.

IMPORTANT DATES

- First Announcement — December 2006
- Registration Deadline — 15 February 2007
- Second Announcement — February 2007

- Abstract Submission Deadline 15 April 2007
- Conference Programme Available June 2007
- Publication of Abstracts June 2007
- Arrival in Syktyvkar 4 September 2007
- Conference 5 – 7 September 2007
- Scientific Field Trips 8 – 10 September 2007
- Departure of Participants from Syktyvkar 11 September 2007

Registration fee: $100

The fee covers the book of abstracts and some conference materials, coffee breaks, a tour of the town and museum visits. The payment deadline is 1 June 2007.

SCIENTIFIC FIELD TRIPS

- Option 1: Liali Forest Research Station (8 September 2007).
- Option 2: Ust-Kulom District: field trip – examination of podzolic soils of a chronosequence of clear cuts (8 – 10 September 2007).

CONTACT INFORMATION

Institute of Biology, Komi Scientific Center, Ural Division of RAS, 167982,
28 Kommunisticheskaya st., Syktyvkar, Russia
Tel.: 00 7 (8212) 24-51-15; Fax: 00 7 (8212) 24-01-63
E-mail: soilforest@ib.komisc.ru

REGISTRATION FORM

First name: .....

Family name: .....

Middle name: .....

Academic status: .....

Academic degree(s):.....

Affiliation: .....

Post: .....

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Address: .....

.....

.....

Telephone: .....

Fax: .....

E-mail: .....

Title of the paper/poster: .....

.....

.....

Topic:.....

Presentation:	☐ poster	☐ oral
Need hotel reservation:	☐ Yes	☐ No
Excursion:	☐ Yes	☐ No
Excursion option:	☐ 1	☐ 2

Registration form is submitted either by e-mail: soilforest@ib.komisc.ru
Or by regular post: see CONTACT INFORMATION.

The Department of Projects and Rural Engineering of the Public University of Navarre (Spain) is pleased to invite you to participate in the 'IV International Symposium on Gully Erosion', to be held at Pamplona (Spain) from 17 – 19 September 2007.

MEETING THEMES

- This Symposium aims to review current understanding and information on gully erosion by reporting progress in the following topics:
- Importance: e.g. on/off-site gullying impact on soil properties, landforms and landscape at different times and spatial scales.
- Characterization: e.g. experimental investigation on different kinds of gullies, monitoring techniques of gully erosion, historical reconstruction of processes.
- Controlling factors: e.g. effect of anthropogenic activities on gullying, interaction between gully erosion and other land degradation processes, role of vegetation.
- Control measures: e.g. prevention of gullying, gully restoration methods.
- Processes and modelling: last but not least, we shall greatly appreciate receiving contributions on this important topic: e.g. gully headcut mechanics, channel network evolution and gully erosion thresholds.

SCIENTIFIC COMMITTEE

Carlos V. Alonso (USA), Gerardo Benito (Spain), Sean Bennett (USA), John Boardman (UK), Rafael L. Bras (USA), Rorke B. Bryan (Canada), Javier Casalí (Spain), Luisa M. De Santisteban (Spain), Florin Florineth (Austria), Rafael Giménez (Spain), Juan V. Giráldez (Spain), Gerard Govers (Belgium), Chi-hua Huang (USA), Mike Kirkby (UK), Yong Li (China), Javier López (Spain), José A. Martínez-Casasnovas (Spain), Jean Poesen (Belgium), Kerry Robinson (USA), Mathias J.M. Römkens (USA), Susana Schanabel (Spain), Aleksey Sidorchuk (Russian Federation), Andrew Simon (USA), Christian Valentin (France).

KEY DATES

15 March 2007: Due date for papers (no more than 2 pages).
20 May 2007: Deadline for communication to the authors of the Scientific Committee's decision. Accepted papers may include minor corrections, to be made by the authors.
31 May 2007: Due date for submission of final version of papers.
30 June 2007: Deadline for 'Early Bird Registration' with reduction in registration fees.

CONFERENCE VENUE

The Symposium will be held at the facilities of the Public University of Navarre, Campus de Arrosadía s/n, Pamplona, Spain, from 17 – 19 September 2007. The exact location will be defined soon.

CONTACT DETAILS

For more details, please visit the Symposium webpage:
http://www.unavarra.es/erosion/index.htm

CONFERENCE TOPICS

(A) Natural Degradation Processes

1. Soil erosion (water and wind).
2. Impact of global change on erosion processes.
3. Landslides and rockfalls.
4. Torrents and torrential floods.
5. Hydrological processes.
6. Sediment transport and sedimentation processes.
7. Impact of soil erosion and sediment transport on water quality.
8. Monitoring of erosion and sedimentation processes.
9. Modelling of erosion and sedimentation processes.
10. Vegetation, biodiversity and slope stability.
11. Eco-engineering and land restoration.

(B) Erosion and Torrent Control Works: Watershed Management

1. Risk analysis and risk management of mountain hazards.
2. Erosion control works.
3. Soil conservation.
4. Torrent control works.
5. Sediment management.
6. Effects of erosion and torrent control works.
7. Wind erosion control.
8. Ecological engineering for erosion and torrent control.
9. Impact of land use on soil erosion and sediment transport.

(C) Social and Economic Aspects of Erosion and Torrent Control

1. Soil erosion and torrents as a social problem.
2. Economic effects of erosion and torrent control works.
3. Project management for soil and water protection.
4. Strategy for erosion and torrent control in view of sustainable development of mountain regions.
5. Legal background and normative acts for erosion and torrent control.
6. Institutional aspects of erosion and torrent control.

CONFERENCE LANGUAGE

English will be the working language.

IMPORTANT DEADLINES

16 March 2007: abstract and registration submission.
15 April 2007: abstract acceptance.
30 June 2007: full paper submission.

Conference organizer contact details
Professor Dr Stanimir Kostatinov – E-mail: kost@EUnet.yu
Professor Dr Nada Dragovic – E-mail: nadad@verat.net
Faculty of Forestry, University of Belgrade, Kneza Viseslava 11030 Belgrade, Serbia.
Tel: 00 381 11 3553 122; Fax: 00 381 11 2545 485.

THIRD AND FOURTH ANNOUNCEMENTS

Pedometrics 2007

BIANNUAL CONFERENCE OF COMMISSION 1.5 PEDOMETRICS, DIVISION 1, OF THE INTERNATIONAL UNION OF SOIL SCIENCES (IUSS)

Dear Colleagues,

We are pleased to announce Pedometrics 2007 (the Biannual Conference of Commission 1.5 Pedometrics, Division 1, of the International Union of Soil Sciences (IUSS)) to be held 27 – 30 August 2007 in Tübingen, Germany.

Pedometrics 2007

The Conference covers all major topics of pedometrical research and their applications. It comprises geostatistics, the research fields of the related working group on digital soil mapping, proximal soil sensing, as well as soil fractals, wavelets and spatial accuracy.

We welcome all soil scientists, soil surveyors, soil geographers, environmental scientists and engineers, GIS specialists, geostatisticians, statisticians and mathematicians to join the Conference and exchange their knowledge.

A Pre-Conference Workshop on 'Uncertainty Propagation Analysis' will be held by Gerard B.M. Heuvelink and James D. Brown. A field trip introducing the soilscapes and the famous vineyards of Baden-Württemberg follows the Conference.

Information

For more information on Conference venue, important dates, registration information, the workshop and the tentative agenda, visit the Conference web site:
http://www.pedometrics.de.

We would appreciate if you could please forward this message to colleagues and staff who may be interested in attending.

We are look forward to seeing you in Tübingen!

Best wishes

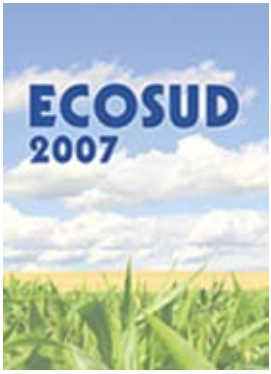
Thorsten Behrens, Volker Hennings and Thomas Scholten.

Contact:

Thorsten Behrens
University of Tübingen
Institute of Geography
Ruemelinstrasse 19-23
72070 Tübingen
Germany.

Tel: 00 49 7071 29 78943
Fax: 00 49 7071 29 5391
E-mail: thorsten.behrens@uni-tuebingen.de

Organization and Support



Sixth International Conference on Ecosystems and Sustainable Development
Coimbra, Portugal, 5 – 7 September 2007

ECOSUD 2007 is the Sixth International Conference in the well-established series on 'Ecosystems and Sustainable Development'. The meetings provide a unique forum for the presentation and discussion of recent work on different aspects of ecosystems and sustainable development, including physical sciences and modelling. The Conference aims to help create a new science in line with Prigogine's statement that *"at all levels we observe events associated with the emergence of novelties and narrative elements, which we may associate with the creative power of nature."* ECOSUD is not only a forestage to present novel research related to ecological problems from all over the world; it also gives opportunities for new emergent ideas in science arising from the cross fertilization of different disciplines, including mathematical models and eco-informatics, evolutionary thermodynamics and biodiversity, structures in ecosystems modelling and landscapes, to mention but a few.

The aim of the Conference is to encourage and facilitate interdisciplinary communication between scientists, engineers and professionals working in ecological systems and sustainable development. Emphasis will be given to those areas that will most benefit from the application of scientific methods for sustainable development, including the conservation of natural systems around the world. The Conference objectives have evolved over the years, seeking to integrate thermodynamics, ecology and economics into 'ecodynamics'. This successful series first started in Peniscola, Spain (1997); and continued in Lemnos, Greece (1999); Alicante, Spain (2001); Siena, Italy (2003) and Cadiz, Spain (2005).

Conference Topics: Thermodynamics and ecology; Sustainability indicators; Mathematical and system modelling; Ecosystems modelling; Biodiversity; Sustainability development studies; Conservation and management of ecological areas; Socio-economic factors; Energy conservation and generation; Environmental and ecological policies; Environmental management; Environmental risk; Natural resource management; Recovery of damaged areas; Biological aspects; Complexity; Remote sensing; Landscapes and forestation issues; Soil and agricultural issues; Water resources; Sustainable waste management; Air pollution and its effects on ecosystems. For further information, please visit our website:

http://www.wessex.ac.uk/conferences/2007/eco07/index.html

or e-mail the Conference Secretariat at: ecosud@wessex.ac.uk

Floodrepair.net

The 'Flood Repair Network' is pleased to draw your attention to the
'First International Conference on Flood Recovery,
Innovation and Response' (FRIAR)

Venue: Institute of Civil Engineers (ICE) Headquarters, Great George Street, London, UK
Dates: 2 and 3 July 2008 (please note the revised dates).

This two day Conference will provide a unique opportunity for Practitioners and Researchers to meet in order to exchange experience and ideas.

Scientific and technical sessions will provide an opportunity for the international flood repair community to share experiences and best practice. Themes will include flood repair, research, recovery, response, insurance and innovation in this field. A schedule of social events will also be offered.

The first call for Abstracts is currently being put into circulation, along with details of various advertising and promotional packages.

There is already significant interest in this event, so please register on our website. To obtain further details about this exciting project and to reserve your place, please visit our web site:

www.floodrepair.net

EPSRC

Engineering and Physical Sciences Research Council

2nd International Conference on Ground Bio- and Eco-engineering
The Use of Vegetation to Improve Slope Stability
Beijing, China, 14 – 18 July 2008

This Conference is the second in the series **'The Use of Vegetation to Improve Slope Stability.'** The first Congress was held at Thessaloniki, Greece, from 13 – 17 September 2004. In an era where more natural hazards are occurring; soil erosion, landslides and other catastrophic events cause loss of lives and infrastructure and major environmental damage. The aim of these meetings, therefore, is to bring together scientific researchers, practitioners, geotechnical and civil engineers, biologists, ecologists and foresters to discuss current problems in slope stability research and how to address those problems using ground bio- and eco-engineering techniques.

Ground bioengineering methods integrate civil engineering techniques with natural materials to obtain fast, effective and economic methods of protecting, restoring and maintaining the environment. Eco-engineering has been defined as a long-term ecological strategy to manage a site with regards to natural or man-made hazards. Conference sessions will focus on an area where such engineering techniques are used increasingly frequently (i.e. natural and man-made slopes). Papers will be presented on slope instability, erosion, soil hydrology, mountain ecology, land use and restoration and how to mitigate these problems using vegetation. The mechanics of root-soil interaction are of utmost importance, along with the modelling of root reinforcement and the development of decision-support systems, areas where significant advances have been made in recent years. Proceedings will be published in a special edition of an international journal. We hope that you will be able to join us at this meeting, to be held in exciting Beijing, the 2008 Olympic City!

Organizing Committee:

T. FOURCAUD, CIRAD, Montpellier, France / LIAMA-CASIA, Beijing, China.
L. JOUNEAU, INRA Jouy / LIAMA-CASIA, Beijing, China.
H. LU, WASWC, Beijing, China.
Y. LU, Chinese Academy of Forestry, Beijing, China.

T. LUO, Institute of Tibetan Plateau Research CAS, Beijing, China.
J. NORRIS, Nottingham Trent University, Nottingham, UK.
I. SPANOS, NAGREF, Thessaloniki, Greece.
*A. STOKES, INRA, Montpellier, France / LIAMA-CASIA, Beijing, China.
X. ZHANG, LIAMA-CASIA Beijing, China.

***Conference Chair and for further information, please contact:**

Alexia Stokes
LIAMA-CASIA, PO Box 2728,
Zhonguancun Dong Lu 95, Hadian,
Beijing 100080
P.R. China
E-mail: stokes@liama.ia.ac.cn

Tel: 00 86 10 82614528
Fax: 00 86 10 62647458.

5th International Congress of the ESSC

EUROPEAN SOCIETY FOR SOIL CONSERVATION

Changing Soils in a Changing World: the Soils of Tomorrow
25 – 30 June 2007, Palermo, Italy

Third Announcement

BACKGROUND

Soil is the thin layer of the Earth that fulfils fundamental functions in terms of life in general and particularly in terms of the needs and well being of human societies. Increasing demands are being imposed upon the soil by different human activities. These activities are growing and competing with each other, without taking account of the diversity of soils, their function and their potential. Consequently, soils are degraded in different ways, depending on their vulnerability.

The second half of the 20th Century was particularly disastrous: erosion, urbanization, landslides and flooding, local and diffuse contamination, salinization and entisolization were the main problems linked to an unbalanced relationship between Man and soil. Throughout Europe, the headlong rush into agricultural, industrial and urban development wrought destruction upon soils and their functions. Little has been done in reality to mitigate soil degradation and to improve the condition of soil already heavily degraded. This is largely due to ignorance, in all spheres of society, of what the soil really is and why it is necessary to conserve its functions. Such ignorance has its roots in the absence of soil awareness.

OBJECTIVES

The main objectives of the '5th ESSC International Congress' is to promote exchange and discussion about the problems that affect soils due to the pressure of Man on Soils and Landscape, that are becoming progressively more evident and to stimulate soil awareness in civil society. The Congress is open to soil scientists, educators and policy-makers. It will consist of invited lectures, scientific sessions with oral and poster presentations and scientific and cultural excursions.

DEADLINES

31 January 2007	Deadline for abstract submission
28 February 2007	Deadline for registration at reduced fee
31 March 2007	Notice of acceptance of abstracts
30 April 2007	Last announcement and final programme

For registration, please refer to our website:
www.esscpalermocongress.it

The Organizing Committee will examine the possibility of publishing the Congress proceedings in a volume printed by CATENA VERLAG. All participants are kindly requested to submit their papers/presentation, in compliance with the instructions indicated on the web site.

TOPICS AND INVITED SPEAKERS

Lectio Magistralis	Ahmet MERMUT	Saskatchewan	Canada
Topic 1: Soils and Society	Victor TARGULIAN	Moscow	Russia
Topic 2: Soil Erosion	Eric ROOSE	Montpellier	France
Topic 3: Soil Organic Matter	Nicola SENESI	Bari	Italy

Topic 4: Soil Degradation and Desertification	Marcello PAGLIAI	Florence	Italy
Topic 5: Soil Pollution and Contamination	Steve McGRATH	Rothamsted	United Kingdom
Topic 6: Soil Conservation and Soil Quality	Lars BERGSTRÖM	Uppsala	Sweden
Topic 7: Policies for Environmental Conservation in a Global Society	Winfried BLUM	Vienna	Austria
Topic 8: New Approaches and Technologies for Soil Assessment	Paolo SEQUI	Rome	Italy

ORGANIZING COMMITTEE

Carmelo Dazzi, Vito Ferro, Vincenzo Bagarello, Salvatore Monteleone, Ignazio Poma, Edoardo Costantini, Lucio Gristina, Giuseppe Lo Papa.
Università di Palermo
Viale delle Scienze
90128 Palermo
Italy.
Tel: 00 39 091 6650247; Fax: 00 39 091 6650229.

PRELIMINARY PROGRAMME

25 June, Monday

Morning:	Arrival of participants and registration
16:00 – 18:00	ESSC Council Meeting
18:00 – 19:00	Opening ceremony
19:00 – 20:00	Lectio Magistralis
20:00	Welcome reception.

26 June, Tuesday (Topic 1 and 2)

08:30 – 13:00	Registration
09:00 – 09:45	Opening lecture
09:45 – 10:00	Coffee-break
10:00 – 12:30	Thematic session (Topic 1)
12:30 – 14:30	Lunch
14:30 – 15:15	Opening lecture
15:15 – 17:45	Thematic session (Topic 2)

17:45 – 18:00 Coffee-break
18:00 – 19:00 Poster sessions (Topics 1 and 2).

27 June, Wednesday (Topics 3 and 4)

09:00 – 09:45 Opening lecture
09:45 – 10:00 Coffee-break
10:00 – 12:30 Thematic session (Topic 3)
12:30 – 14:30 Lunch
14:30 – 15:15 Opening lecture
15:15 – 17:45 Thematic session (Topic 4)
17:45 – 18:00 Coffee-break
18:00 – 19:00 Poster sessions (Topics 3 and 4)
19:00 – 20:00 ESSC General Assembly.

28 June, Thursday (Topics 5 and 6)

09:00 – 09:45 Opening lecture
09:45 – 10:00 Coffee-break
10:00 – 12:30 Thematic session (Topic 5)
12:30 – 14:30 Lunch
14:30 – 15:15 Opening lecture
15:15 – 17:45 Thematic session (Topic 6)
17:45 – 18:00 Coffee-break
18:00 – 19:00 Poster sessions (Topic 5 & 6)
21:00 Congress dinner.

29th June, Friday (Topic 7 and 8)

09:00 – 09:45 Opening lecture (invited speaker)
09:45 – 10:00 Coffee-break
10:00 – 12:30 Thematic session (Topic 7)
12:30 – 14:30 Lunch
14:30 – 15:15 Opening lecture (invited speaker)
15:15 – 17:45 Thematic session (Topic 8)
17:45 – 18:00 Coffee-break
18:00 – 19:00 Poster sessions (Topics 7 and 8)
19:00 – 19:30 Conclusions of the Congress.

30 June, Saturday

07:30 – 19:45 One-day scientific and cultural excursion (2 choices).
1st choice Scientific and cultural excursion to Sparacia Farm and Temple valley of Agrigento.
2nd choice Scientific and cultural excursion to Belice area and Selinunte archaeological area.

SCIENTIFIC AND CULTURAL EXCURSION

1st option
SPARACIA FARM AND TEMPLE VALLEY IN AGRIGENTO

Cultural and pedo-agronomical aspects of the Mediterranean environment. Vertic soils of the Mediterranean environment. Experimental installations for measuring water erosion at microplot, plot and basin scales in a hilly Sicilian area.

The trip proceeds to Agrigento with a visit to the TEMPLES VALLEY, where there is

one of the best-preserved Greek archaeological zones in the world. An English-speaking guide will show the Concordia, Venus, Zeus and Hercules temples. At the end of the visit, return to Palermo.

2nd option
BELICE AREA AND SELINUNTE ARCHAEOLOGICAL PARK

Cultural and pedo-agronomical aspects of the Mediterranean environment. Problems of land management due to poor land management decisions. Environmental problems due to soil consumption. The trip proceeds with a visit to the important ARCHAEOLOGICAL PARK OF SELINUNTE. It consists of various temples, set in a semi-deserted zone, since the old town is uninhabited nowadays. There are the remains of the old city, destroyed by an earthquake in antiquity. At the end of the visit, return to Palermo.

SCIENTIFIC COMMITTEE

Jaques Berthelin,	Nancy	France
Pavol Bielek	Bratislava	Slovakia
Andrea Buondonno	Bari	Italy
Wolfgang Burghardt	Essen	Germany
Nicola Fohrer	Kiel	Germany
Michael Fullen	Wolverhampton	United Kingdom
Donald Gabriels	Ghent	Belgium
Ádám Kertész	Budapest	Hungary
Luca Montanarella	Ispra	Italy
Paolo Nannipieri	Firenze (Florence)	Italy
Mark Nearing	Tucson	USA
Stephen Nortcliff	Reading	United Kingdom
Ildefonso Plá Sentis	Lleida	Spain
Antonio Rodriguez	La Laguna (Canary Islands)	Spain
Juan Sanchez	Valencia	Spain
Thomas Scholten	Tübingen	Germany
Diane Stott	Purdue	USA
Des Walling	Exeter	United Kingdom

WEBSITE
www.esscpalermocongress.it

SCIENTIFIC SECRETARIAT
Professor Carmelo Dazzi
Dipartimento di Agronomia Ambientale e Territoriale (DAAT)
Facoltà di Agraria - Università di Palermo
Viale delle Scienze
90128 Palermo
Italy.
E-mail:
dazzi@unipa.it
mail@esscpalermocongress.it
Tel: 00 39 091 6650247
Fax: 00 39 091 6650229

ORGANIZING SECRETARIAT
BIBA Congressi
Via Emilia
38-90144 Palermo
Italy.
E-mail: congressi@bibatour.it
Tel: 00 39 091 527416
Fax: 00 39 091 527416.

Reminder for the next issue:

Articles, reports, letters, views or comments on any aspect of soil erosion and conservation in Europe are always welcome.

We invite proposals for special thematic issues of the Newsletter. We also welcome any comments on the ESSC Newsletter and suggestions on how it can be improved and developed.

Do not forget to send in your details of the following information:

(i) Reviews of recent conferences.
(ii) Recent grant awards.
(iii) The citation details and abstracts of completed Ph.D. and M.Sc. theses.
(iv) Newly enrolled Ph.D. research students, title of their research topic and names of research supervisors.
(v) Recent staff institutional movements/promotions.
(iv) A reference list of your 'new' international refereed scientific journal papers, which have been published recently (since and including the year 2000).

Send these details to either:
Professor Mike Fullen: m.fullen@wlv.ac.uk
or Dr Colin Booth: c.booth@wlv.ac.uk
and they will include this information in the next issue.

PLEASE NOTE:

We will publish four Newsletter issues per year. The deadlines for 2007 onwards are: 10 January 1 April 1 July 1 October.

Some Closing Thoughts:

"The soil must be man's most treasured possession: so he who tends the soil wisely and with care is assuredly the foremost among men" (George Stapleton).

"The plough is one of the most ancient and most valuable of man's inventions; but long before he existed the land was regularly ploughed ... by earthworms" (Charles Darwin).

"Whoever could make two ears of corn or two blades of grass grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together" (Jonathan Swift).

"The cure for boredom is curiosity. There is no cure for curiosity" (Ellen Parr).

AIMS OF THE SOCIETY

The ESSC is an interdisciplinary, non-political association, which is dedicated to investigating and realizing soil conservation in Europe. The ESSC pursues its aims in the scientific, educational and applied sectors by:

Supporting investigations on soil degradation, soil erosion and soil conservation in Europe,

Informing the public about major questions of soil conservation in Europe,

Collaborating with institutions and persons involved in practical conservation work in Europe.

The ESSC aims at co-ordinating the efforts of all parties involved in the above cited subjects: research institutions; teachers and students of geosciences, agriculture and ecology; farmers; agricultural planning and advisory boards; industries and government institutions.

ZWECK DER VEREINIGUNG

Die ESSC ist einer interdisziplinäre, nicht politische Vereinigung. Ihr Ziel ist die Erforschung und Durchführung des Schutzes der Böden in Europa. Die ESSC verfolgt dieses Ziel auf wissenschaftlichem, erzieherischen und angewandtem Gebiet:

durch Unterstützung der Forschung auf den Gebieten der Boden-Degradierung, der Bodenerosion und des Bodenschutzes in Europa,

durch Information der Öffenlichkeit über wichtige Fragen des Bodenschutzes in Europa,

durch Zusammenarbeit mit Institutionen und Personen, die an der Praxis des Bodenschutzes in Europa beteiligt sind.

Die ESSC will alle Personen und Institutionen zusammenführen, die sich für die genannten Ziele einsetzen: Forschungsinstitutionen, Lehrer und Studenten der Geowissenschaften, der Landwirtschaftswissenschaften und der Ökologie, Bauern, landwirtschafliche Planungs- und Beratungsstellen, Industrieunternehmen und Einrichtungen der öffentlichen Hand.

BUTS DE L'ASSOCIATION

L'ESSC est une association interdisciplinaire et non politique. Le but de l'association est la recherche et les réalisations concernant la conservation du sol en Europe. L'ESSC poursuit cette finalité dans les domaines de la recherche scientifique, de l'éducation et de l'application:

en encourageant la recherche sur la dégradation, l'érosion et la conservation du sol en Europe,

en informant le public des problemes majeurs de la conservation du sol en Europe,

par la collaboration avec des institutions et des personnes impliquées dans la pratique de la conservation du sol en Europe.

L'ESSC souhaite favoriser la collaboration de toutes les personnes et institutions poursuivant les buts définis ci-dessus, en particulier: institutions de recherche, professeurs et étudiants en géosciences, des agriculteurs, des institutions de planification et des conseil agricole, de l'industrie, et des institutions gouvernementales.

OBJECTIVOS DE LA SOCIEDAD

La ESSC es una asociación interdisciplinar, no-politica, dedicada a la investigación y a la realización de acciones orientadas a la conservación del suelo en Europa. La ESSC persigue sus objectivos en los sectores cientificos, educacionales y aplicados, en al ámbito europeo:

promocionando la investigación sobre degradación, erosión y conservación de suelos,

informanto al público sobre los principales aspectos de conservación de suelos,

colaborando con instituciones y personas implicadas en la práctica de la conservación de suelos.

La ESSC aspira a coordinar los esfuerzos, en los temas arriba mencionados, de todas las partes implicadas: centros de investigación, profesores y estudiantes de geo-ciencias, agricultura, selvicultura y ecología, agricultores, servicios de extensión agraria, industrias e instituciones gubernamentales.

Visit the ESSC Website: http://www.essc.sk

MEMBERSHIP FEES

I wish to (please mark appropriate box):

- Join the ESSC
- Renew my membership of the ESSC
- Know whether I have outstanding membership contributions to pay

Membership rates:

Standard Rates:

- One year € 25.00
- Three years € 70.00

Members in Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia and Ukraine:

- One year € 10.00
- Three years € 25.00

Students:

50 % reduction on above rates for three years
Your supervisor must provide written confirmation of student status

I wish to pay my membership contribution by (please mark appropriate box):

- Eurocard / Mastercard
- Visa Card
- American Express Card
- Bank Transfer

Branch address: Fortis Bank, Zonnestraat 2, B-9000 Gent, Belgium;
International transaction codes:
IBAN - BE29 0014 5139 8064 and BIC - GEBABEBB;
Account name: European Society for Soil Conservation;
Account number 001-4513980-64

CARD NO. ..... EXPIRY .....

Amount: € ..... Date: ..... Signature: .....

NAME: .....

ADDRESS: .....

.....

E-MAIL: .....

MEMBERSHIP NUMBER (if known): M0 .....

Please send this form to: ESSC Treasurer, Dr Wim Cornelis, Department of Soil Management and Soil Care, Coupure links 653, B-9000 Gent, BELGIUM.

wim.cornelis@UGent.be