WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION

HOT NEWS

Issue 02, 2018

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Contents

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http://www.keaipublishing.com/en/journals/international-soil-and-water-conservation-research/

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The deadline of online registration for attending 2nd IYFSWC has been postponed to April, 10

So far, more than 100 scientists from 18 countries such as Russia, China, Iran, Canada, Brazil, Egypt, Austria, Belgium, Germany, Hungary, japan etc. have been registered for participation at The Second International Youth Forum on Soil and Water Conservation. Requested by many potential participants who have not complete the registration, we decide to postpone the close of registration system to April 10, 2018, so please finish your online registration/abstract submission as soon as possible. The deadline for the early bird registration fee payment will be open until 10 May. The notice on abstract acceptances will be sent around until 20 April. We welcome more scientists to be involved in this important forum. We are happy to meet you in the beautiful Moscow in this coming August!

Very Important information:

(1) about the Outstanding Youth Paper Award:

The WASWAC Youth Outstanding Paper Award (DATUM) 2018 will be continued in this forum, the application for the award is open from now. Anyone wants to apply for the award, should submit an online registration and application form by April 10, and should submit the full paper before May 31, 2018. Please always be remembered the two key dates!

http://www.eng.geogr.msu.ru/IYFSWC/registration/

The description and related form for the award:

http://www.eng.geogr.msu.ru/IYFSWC/youth_paper_award/

(2) about the Visa application

We accept visa applications for invitation letters for Shengen countries until August 1st. Application for visa invitation submitted by participants from Finland, Sweden, Norway, Iceland, Denmark, Germany, France, Netherlands, Italy, China etc. will be proceed by Moscow State University international office (within 1-2 weeks). Applications for visa invitation submitted by participants from most of non-Shengen countries (including USA, Canada, UK etc.) will be transferred to Russian Migration Service who prepare an invitation letter (within the expected period of 1 month after submission the application). Please submit your applications in time.

For the participants from some of non-Shengen countries including USA, Canada, UK according to the requirements of the Russian Federal Migration Service, to proceed with your invitation LOC will have to pay tax (state duty) which costs 800 Rubles (approximately 12 EUR) (IMPORTANT: obtaining invitation for citizens of China is free of charge). As far as these expenses are not included into registration fee, we kindly ask you to get ready to reimburse us this cost in Moscow. You can do it on the registration desk by cash in Rubles (you will get the receipt of payment).

After submitting your application for visa invitation please guarantee this reimbursement by short e-mail to iyfswc-2018@geogr.msu.ru.

Application for visa invitation will be processed after receiving registration fee payment via http://www.eng.geogr.msu.ru/IYFSWC/payment/

Visa application form available here:

http://www.eng.geogr.msu.ru/IYFSWC/visa/

(3) about the side event

Short excursions to the Earth Science Museum, as the side event, will be arranged during the conference. The Museum is located in main campus of MSU and to MSU Botanical Garden nearby the main campus. You can sign up for them at registration desk.

(4) about the conference scientific tour

Conference scientific tour will be held on August 29th. Klinsko-Dmitrovskaya moraine ridge and the Moscow water supply system will be arranged as the sites of scientific tour.

(5) about the training course

- Open source datasets in hydrology
- Catchment-scale modeling tools in water and water quality: ECOMAG
- Quantitative assessment of soil and gully erosion rates
- Soil erosion and sediment redistribution on the global scale: problems and decisions

Tuition fee for the participants of IYFSWC/ICCE conference: 90 EUR

(6) about the Post-conference tours

The post-conference tours include 3 days in St. Petersburg (September 01 -03, 2018) or 3 days in Kazan (September 01 -03, 2018).Anyone wants to take part in the post-conference tour, please indicate your name and choose preferred excursion here:

http://www.eng.geogr.msu.ru/IYFSWC/post_tour/

The payment will be organized at registration desk during the conference and will depend on number of excursionists.




St. Petersburg




Kazan

Any further questions please contact: iyfswc-2018@geogr.msu.ru

Details here: http://www.eng.geogr.msu.ru/IYFSWC/home.php

WASWAC World Conference IV will be held in 2019

Managing Soil and Water Resources for Climate-Smart Agriculture Toward Global Food and Livelihood Security

At New Delhi, India, November 5th-9th, 2019

The conference will focus on the protection and conservation of land and natural resources for sustainable use and development. The target groups include scientists, researchers and academicians with multidisciplinary expertise, outreach and extension professionals, engineers, land users including farmers, planners and policy makers, students, NGO's, and other stakeholders who are active or interested in the states of art and science of natural resources management. We feel proud in inviting your active participation and valued deliberations to make this international conference a successful event.

Welcome to be New Delhi to attend The WASWAC World Conference IV in November 2019

Fire Impacts and Soil Painting: A Teaching Project

By Díaz-Raviña M.a and Rubio J.L.b

Further inquiry please email to mdiazr@iiag.csic.es

This brief report concern to the winner in the Group B Category (12-18 years old) of the Food and Agriculture Organization (of the United Nations) Global Soil Partnership (FAO/GSP) of the Soil Painting Competition 2017 celebrated to commemorated the 5th of December World Soil Day with the theme 'Caring for the Planet starts from the Ground' . Initially we will introduce the problematic of the wildfires in the north of the Iberian Peninsula and later on we focussed in the aim of the project “After the fire” as well as in the whole elaboration process of the winner picture.

Wildfires are one of the most widespread factors responsible for forests deforestation and soil degradation around the world by destroying the vegetation cover and increasing nutrient and soil losses by leaching and erosion. The frequency and extent of wildfires increased dramatically in the European Mediterranean region from the 1960s, aided by a general warming and drying trend, but driven primarily by socio-economic changes, including rural depopulation, land abandonment and afforestation with flammable species. Most soil physical, chemical and biochemical properties are more or less affected by fires leading to a reduction in soil quality; thus, fire can cause partial or complete combustion of organic matter, deterioration of soil structure, depletion of nutrients through volatilization and leaching, altered aggregate stability and water repellency, together with marked alterations of the number, activity and composition of soil microbial communities.

As consequence of these fire induced changes in soil properties and its vegetation cover, the soil is more susceptible to suffer soil erosion processes, particularly during the first 4-6 months after the fire when the soil is bare and intense rainfall events are frequent. Soil degradation caused by wildfires is particularly accentuated in this The NW of Spain (Galicia), where edaphic and climatic factors, high slope values and meteorological conditions (abundant high intensity rainfall events in the

autumn period just after wildfires) soil degradation, destruction of vegetation as well as enormous losses of soil and nutrients due to runoff and erosion processes in the soil surface horizon. In Galicia, in the last 42 years 250,000 forest fires in the last 42 years 250,000 forest fires have been registered affecting 1,711,000 ha (86% of its forest area) and causing dramatic effects. In 2006, two thousand fires occurred in 12 days, affecting 75,000 ha approaching urban centres, although most of them were concentrated in small villages and affected 50% of their forest surface and post-fire erosion caused very important ecological and economics damages (sediments even reached to the sea).

Field trip of the work elaboration project "After the fire": visit to the affected burnt area, interviews to the specialists and collection of vegetal and soil materials (ashes, soil, seeds and straw mulching).

Efforts must be therefore made to protect the soil and minimize wildfire risk and to mitigate post-fire soil erosion by the implementation of post-fire stabilisation and emergency rehabilitation treatments such as such as broadcast seeding, mulching and erosion barriers. In the last decade the results of these investigations in Spain have showed that the efficacy of these techniques, particularly grass seeding, was

highly variable depending on wildfire impact, post-fire conditions (soil properties, vegetation, climatic conditions) and time passed after the fire (efficacy of 20-40%) and that mulching was the most effective technique for protection soil against post-fire erosion (efficacy of 70-90%).

Field trip of the work elaboration project "After the fire": visit to the unburnt area and collection of vegetation and soil samples of different horizons along the soil profile.

In October 2017, 1,300 ha were affected in only 1 day in Galicia. This created a situation of great concern due to the recurrent problem of forest fires; this interest was promoted, in part, by the balance in human lives and material damages in NW Iberian Peninsula (Galicia and north of Portugal) of the wave of fires triggered by the conditions associated with the passage of Hurricane Ophelia during the past month of October that created a situation of great social alarm in all sectors of society. Many teachers of different levels of education tried to transmit to the students the problems derived from the direct (mainly destruction of vegetation cover and soil degradation) and indirect effects (post-fire erosion) of forest fires as well as the need of protect the soil against post-fire erosion and the further

restauration of the forests ecosystems when it is needed. This fact coincided with the announcement of the FAO Global Soil Partnership (GSP) with the call for the Soil Painting Competition to celebrate the 5th of December World Soil Day with the theme 'Caring for the Planet starts from the Ground'.

Team of the painters group performing various small-scale tests with different designs and colours in order to achieve the desired final work that has been submitted to the Soil Painting FAO Competition.

The information about this announcement of the FAO was disseminated by the Spanish Society of Soil Science (SECS) and the International network “Effects of fire on forest ecosystems” (FUEGORED). Then several teachers of different Departments (Biology and Geology, Technology, Physics, Music, English and Galician language) of the Institute of Secundary Education School of Pontepedriña (I.E.S. Pontepedriña, Santiago de Compostela, Xunta de Galicia, Spain), coordinated by Nicolás Lucas Domínguez, the Head of the Department of Biology and Geology and Dr. in Biology, decided to participate in this event. These teachers are very active and interested in involving the students in innovative projects and the use of different didactic

resources to motivate them and promote knowledge in the impact of different degradation processes on the soil environment. In order to do this, several students of 14-16 years old and their teachers promoted the project "After the fire" and participate in the competition in the Group B Category (Secundary and High School, 12-18 years). This project included several activities carried out both inside and outside of the classroom such as conferences related to the topic and a field trip of the teachers and the students to the affected burnt area with and without implementation of emergency soil rehabilitation techniques (herbaceous seeding, wheat straw mulching) as well as to the corresponding unburnt area. The field trip to see "in situ" the fire effects was assessed by two specialists working in the nearest Research Centre (Biological Mission of Galicia, CSIC), the students performed an interview to these researchers and, finally, they collected the samples of different soil horizons of the burnt soil, the corresponding unburnt control soils as well as vegetation debris and herbaceous seeds and wheat straw used for soil protection against post-fire erosion and carried out to the Institute of Secondary Education School (laboratory). Within this context two conferences about this topic were imparted later in the classroom by the mentioned researchers concerning the topic of the wildfires in Galicia. Finally, they developed the project, supervised by their teachers; one group painted the picture, a second group played the music, and a third group performed the video. In December 2017 they sent the Soil Painting and the video of 1-minute duration including the working activities of the project "After the fire" as well as other required information to the competition. You can see more details about all this interest and hard-work process of the project in the following links:

http/www.fao.org/world-soil-day/activities/es/

http://www.edu.xunta.gal/centros/iespontepedrina/node/646

http://www.secs.com.es/wp-content/uploads/2018/01/NEW-SECS-16-3.pdf (see pages 20-21)

The team of painters of the Spanish Secundary Education School (I.E.S. Pontepedriña, Santiago de Compostela) with her teacher showing the materials used in the picture as well as a part of the Soil Painting at real scale (3 m x 2 m).

In January 2018 they received excellent news since the FAO communicated them by email that they win first place at FAO Global Soil Partnership in the Group B Category of Soil Painting Competition 2017, in other words, the high level of this project was recognized at the Mundial level since they were the winners of this premium. This can be checked in the following link:

http://www.fao.org/global-soil-partnership/pillars-action/2-awareness-raising/soil-painting-competition/en/

The project is still going on, they plant seeds of Quercus and they are following their plant growth. In the next months two conferences with specialists in forest restoration will be organized and finally, approximately 1 year after the fire, they will participate in the burnt forest reforestation of the same burnt area within the collaboration of land managers of Xunta de Galicia (NW Spain). We consider that this is a very good multidisciplinary project that can be used as an example for other

Institutes of the Secondary Education School at National and International level to promote the interest of soils as well as its importance to maintain the life in the planet. In this context, participants showcased their creativity in depicting how soils are indispensable for sustaining development and for this reason it is necessary to protect and conserve them to avoid soil degradation and further recovery (in this case burnt soils). The prize is symbolic 400 dollars and didactic material; therefore, we believe that the researchers and all Societies related to Soil Science should be disseminated and recognize, in the way that they consider more appropriate, particularly in the teaching context, the work of this Spanish team. A series of posters representing all the realization process of the project as well as the soil picture (3 m x 2 m) are now exposed in the more visibility space of the Institute of the Primary and Secundary Education School to show to the students of the whole Institute as well as to the visitors, which can be of great interest. In line with this a previous temporal exhibition "Soil Art: Painting with Soil", which was organized by the Territorial Delegation of the Spanish Soil Science Society (SECS-Galicia) and performed in the Museum of Natural History of the University of to commemorate the 2015 International Year of Soil, showed that painting with soil is a powerful way to show younger generations, as well as other persons of different ages who are visiting the museums, the important role of soil in the maintenance of life in the planet. This exhibition has been a great success since that during the period of 6 months received around 10.000 visitors. You have details about it (diptych and content) in the following links:

http://www.secs.com.es/wp-content/uploads/2015/05/Diptico-SueloArte-castellano.pdf

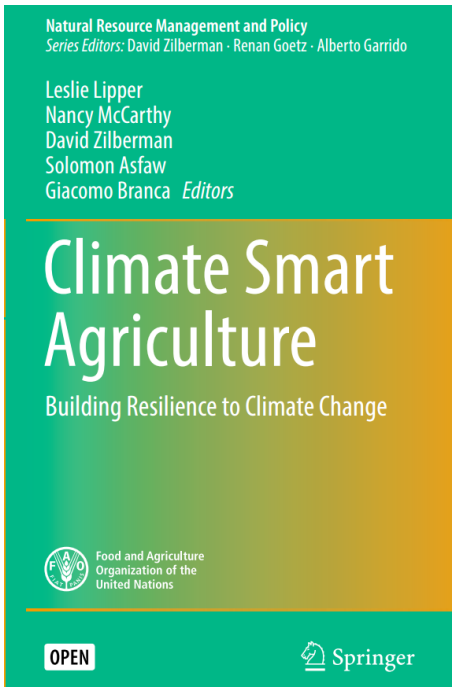
http://www.secs.com.es/wp-content/uploads/2015/05/ContenidoSueloArte.pdf

All the Soil Science researchers around the world should be very proud of the winner Spanish team (I.E.S. Pontepedriña, Santiago de Compostela, Xunta de Galicia, Spain), due to the excellent quality of its project "After the fire" that addresses the problem of forest fires and reveals the soil importance in different sectors of Society through the art, in this case soil painting. The interest and relevance of their work

was collected in several communication media such as newspapers, websites, radio, TV, etc. with news reporting that they were the winners of this award of FAO Soil Paining Competition 2017. It should be noticed that this whole project combines rigorous and well organized scientific work concerning the problem of direct and indirect impacts of wildfires at –short, -medium and long-term and great creativity to express the damages caused in our green forests ecosystems but also the possibility to recover them using soil rehabilitation techniques. For all these reasons, we want to congratulate this multidisciplinary team of teachers and students, coordinated by Dr. Nicolás Lucas Domínguez, and encourage them to continue doing activities of this type that are excellent teaching resources to acquire and expand the knowledge of soils worldwide.

Winner Picture (3 m x 2 m) of the FAO Soil Painting Competition 2017 in the Group B Category of the Spanish team (I.E.S. Pontepedriña, Santiago de Compostela, A Coruña, Spain, students of 14-16 years old).

Climate Smart Agriculture



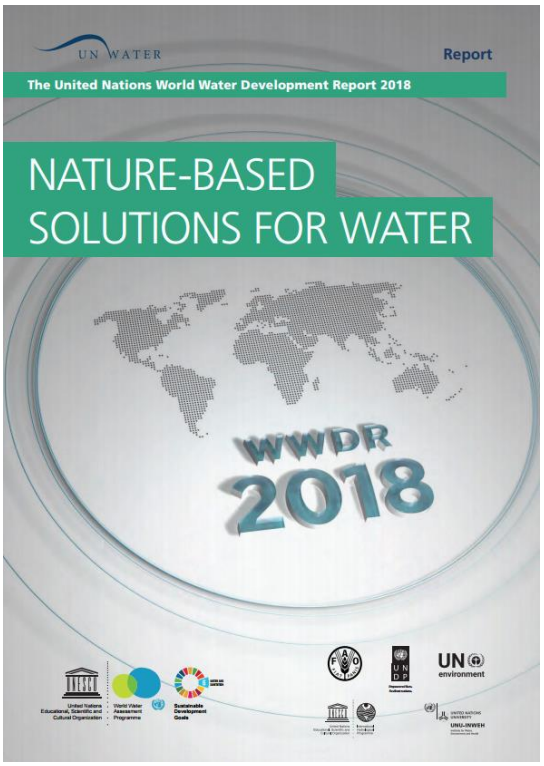
This book is the outcome of a cooperation between Economic and Policy Innovation of Climate-Smart Agriculture (EPIC) team of FAO, Department of Agricultural and Resource Economics of University of California (Berkeley) and the Department of Economics and Business (DEIM) of Tuscia University (Viterbo, Italy). We express sincere gratitude to Professors Alessandro Mechelli and Alessandro Sorrentino (Departmental Faculty) for their continuous support. This publication would not have been possible without the administrative and organizational help of Laura Gori, Cristina Mastrogregori, and Giuseppe Rapiti (Departmental Staff). We would also like to thank the Italian Institute for International Political Studies (ISPI) which hosted the Book Authors' Workshop "Climate Smart Agriculture: Building Resilience to Climate Change" held in Palazzo Clerici, Milan (Italy) on August 6, 2015.

We would also like to sincerely thank FAO-HQ staff particularly Jessica Mathewson, Liliana Maldonado, Paola DiSanto, and Alessandro Spairani for their administrative and organizational support throughout the whole publication process. We finally would like to acknowledge the financial support of FAO.

More information about this series at http://www.springer.com/series/6360

Nature-based Solutions for Water

The United Nations World Water Development Report 2018



Highlight of Preface

The need to ensure that adequate volumes of water of suitable quality are made available to support and maintain healthy ecosystems has long been established. But, nature also plays a unique and fundamental role in regulating different features of the water cycle, in which it can act as a regulator, a cleaner and/or a supplier of water. As such, maintaining healthy ecosystems directly leads to improved water security for all.

As the fifth in a series of annual, theme-oriented reports, the 2018 edition of the United Nations World Development Report (WWDR) focuses on opportunities to harness the natural processes that regulate various elements of the water cycle, which have become collectively known as nature-based solutions (NBS) for water. This is not merely a 'good idea' (which of course it is), but an essential step to ensuring the long-term sustainability of water resources and of the multitude of benefits that water provides; from food and energy security to human health and sustainable socio-economic development.

There are several different types of NBS for water, ranging in scale from the micro/personal (e.g. a dry toilet) to landscape-level applications that include conservation agriculture. There are NBS that are appropriate for urban settings (e.g. green walls, roof gardens and vegetated infiltration or drainage basins) as well as for rural environments which often make up the majority of a river basin's area.

Maximizing nature's potential in helping to achieve the three main water management objectives – enhancing water availability, improving water quality and reducing water-related risks – will require creating an enabling environment for change, including suitable legal and regulatory frameworks, appropriate financing mechanisms and social acceptance. We remain confident that, with the political will to do so, current obstacles, such as the lack of knowledge, capacity, data and information about NBS for water, can be effectively overcome.

As this report points out, there are a number of mechanisms that can be used to accelerate the uptake of NBS for water. Payment for environmental services schemes and green bonds have been shown to generate interesting returns on investment while lowering the need (and costs) for larger, often more expensive infrastructure required for water resources management and the delivery of water supply and sanitation services.

NBS for water are central to achieving the 2030 Agenda for Sustainable Development because they generate social, economic and environmental co-benefits, including in the fields of human health and livelihoods, food and energy security, sustainable economic growth, decent jobs, ecosystem rehabilitation and maintenance, and biodiversity. The substantial value of these co-benefits can tip investment decisions in favour of NBS.

Implementation of NBS involves the participation of many different stakeholder groups, thus encouraging consensus-building and helping to raise awareness about what NBS can truly offer to improve water security. Although primarily targeted at national-level decision-makers and water resources managers, it is hoped that this report will also be of interest to the broader development community, as well as academics, professionals and anyone interested in building an equitable and sustainable water future with the support of NBS.

Download here: http://unesdoc.unesco.org/images/0026/002614/261424e.pdf

Soil and Land Use Change

By Ryusuke Hatano, Hokkaido University, Kita 9 Ni-shi 9, Kitaku, 060-8589 Sapporo, Japan Hatano@chem.agr.hokudai.ac.jp and Sonoko D.Bellingrath-Kimura, Humboldt University of Ber-lin & Leibniz Institute of Agricultural Landscape Research, Eberswalder Straße 84, 15374 Münche-berg, Germany, belks@zalf.de

Land use change has a huge influence on various ecosystem services. While improper land use leads to a reduction in ecosystem services and results in soil degradation (Hatano et al. 2015), optimal land use can maintain or increase ecosystem services.

In this fact sheet, the focus is on ecosystem services related to soil functions. The provisioning of goods is one of the prime ecosystem services. Agricultural land uses rely on the provisioning services of soil to produce food, feed, fibre and fuel. Agricultural land use alters these services by cultivating the soil, controlling the vegetation and adding various amendments. Forestry provides not only timber and biomass, but also various foods such as fungi and understory vegetation. The provision of clean water is getting more and more important under the climate change.

The regulating services of soil are found in the remediation of waste, toxics and other nuisances. Absorption and adsorption of cations and particles on the aggregate surfaces is especially important when it comes to providing clean water. These physicochemical soil functions are hardly influenced by artificial management, while some soil amendments have been found to be effective such as zeolite amendments to immobilize radioactive Cs in soil.

The mediation of flows is also an important regulating service of soil. Material and water flows are hugely influenced by land use. Changes in land use can release or sequestrate carbon till the equilibrium specific to the soil and environmental condition is reached. Soil microbes play a key role in the regulation of nitrogen flows. It is important to connect different spatial and temporal scale to capture the whole flow from regional to global scale (Kimura et al. 2009). Symbiotic nitrogen fixation by rhizobium as well as other plant growth promoting rhizobacteria can be used to enhance nutrient availability. The use of the microbial activities is still difficult to manage since spatial and temporal variability in the field often masks the effect.

Maintaining the physical, chemical and biological conditions of a given environment is also an important regulating service of soil. For example, land use type and soil management methods influence water storage and this function is crucial to prevent soil erosion or to provide water for drinking or succeeding crops.

Cultural services are of importance at landscape scale. Scenic landscape patterns formed by traditional land use attract tourists. Even if there is no economic benefit at field level, there are many areas that maintain special land use systems to boost tourism and, thus, benefit at regional level. Payment for ecosystem services is considered a governance tool to enhance ecosystem services of soil and land use systems (Uthes and Matzdorf 2016).

Soil Degradation and Desertification

By Prof. Dr. Rainer Horn, Past President of IUSS 2017 -2018

CAU Kiel, Hermann Rodewaldstr. 2, 24118 Kiel Ger-many

Based on the GLASOD map, which covers the earth's surface between 72°North and 57°South, a total land area of 13 bn ha is available, of which according to an evaluation of Blum and Eswaran (2004) only 13-18 % are very fertile soils, with more than 50 % being of the lowest fertility class. Since an area of 3-400 km² is irreversibly degraded per day we are not only faced with a shortage of productive soils; to make matters worse these productive soils are also more intensely used for food production. Overuse may result in a decline of soil properties and functions. At the same time the population increases and may reach approx. 9 bn people worldwide in the year 2050, which exacerbates the food production problems. Soil degradation is defined as a change in the soil health status resulting in a diminished capacity of the ecosystem to provide goods and services for its beneficiaries. It is therefore one of the major threats to future life. Soil degradation comprises physical, chemical and biological processes. Rainfall, surface runoff, floods, wind erosion, tillage, mass movements and soil compaction/deformation, and prevented carbon sequestration are examples of physical processes, which lead to a loss of fertile soils and declining soil quality and functionality. The reduction of soil nutrients due to alkalinity and acidity, loss of organic matter or water logging can be regarded as chemical components of soil degradation.

The loss of biodiversity due to non- site adjusted soil management results both in changes in microbial activity, which affects crop yield, and sustainability of soil productivity.

At present 15 % of the total area is degraded which equals 1.95 bn ha and affects 1.5 bn people or 74 % of the poor globally. Approx. 1.6 bn ha are affected by soil erosion, while the further physical degradation amounts to nearly 0.1 bn ha and the chemical degradation to 0.25 bn ha. It can be assumed that nearly half of the eroded land is caused by secondary effects of soil degradation due to compaction and deformation by non-site adjusted management. According to the European Soil Framework Directive (2006) soil compaction is besides water and wind erosion one of the main physical threats causing soil degradation. It is estimated that 32 % of the subsoils in Europe are highly degraded and 18 % moderately vulnerable to compaction. The problem is not limited to cropland or forest areas (especially because of non-site adjusted harvesting machines) but is also prevalent in rangelands and grassland, and even in so-called natural non-disturbed ecosystems. The main reasons for an intense increase in compacted agricultural or forested land are the still increasing weight of the machines as well the increased frequency of machine wheeling under non-favorable site conditions. The same holds true for animal trampling in combination with overgrazing of moist to wet pastures.

Desertification: Since the pressure is increasing on dryland ecosystems to provide services such as food, forage, fuel, building materials, and water needed for humans, livestock, irrigation and sanitation, soil loss due to desertification ranges worldwide at 6 to 12 million km². It defines (a) land degradation in dryland areas and/or (b) the irreversible change of the land to such a state that it can no longer be recovered for its original use.

Desertification-related processes such as reduction of vegetation cover increase the formation of aerosols and dust. These, in turn, affect cloud formation and rainfall patterns, the global carbon cycle, and plant and animal biodiversity. Desertification occurs because of a long-term failure to balance human demand for ecosystem services and the amount the ecosystem can supply.

Come from the IUSS BULLETIN 131, which is available here:

http://www.iuss.org/files/iuss-bulletin131_screenversion.pdf

WASWAC MEMBERSHIP APPLICATION/RENEWAL FORM (Issued 120501)

(For applicants from all countries)

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3. OM (Organization membership): For universities, research and implemental institutions, government agencies, NGOs, societies, associations and international organizations, etc. Persons belonging to an Organization member will receive the same online products and services as the other two above categories: $100/year for an organization with up to 150 persons; $150/year for an organization with up to 300 persons: $200/year for an organization with up to 500 persons; and $10/year for an additional 100 persons or part thereof.

4. SM&GM (Student membership & Gift membership): US$5/year worldwide, to be purchased to give to colleagues, friends, students, etc.

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