The Near East and North Africa (NENA) Soil Partnership Conference

17th - 19th June 2014

Quality Suites Amman Hotel

Amman, Jordan

Table of Contents

List of tables

List of Figures

Resume – Soil status and trends and needs and priorities in the Near East and North Africa

Various challenges and problems are facing soils in different countries across the NENA region, among these, the following were identified: water and wind erosion, salinity and alkalinity, decline of soil fertility, desertification, urbanization, improper soil management practices, water logging, and soil contamination (poor management of chemicals and pesticides). These challenges call for various conservation/management interventions that varies among these countries. However, the common denominator among the different countries is the need for good soil information system that guide the decision making process.

Soil data are generally old and lacking homogeneity in terms of different classification systems that are used (especially among countries), scale and/or resolution of mapping and the availability of most data in non-electronic formats. In the same time, information about the distribution and types of soils are needed urgently by governments to plan the use of land in order to improve productivity and respond to the increasing demand for food and to sustain the productivity of land by reducing land degradation. More specifically, knowledge of the following soil resources data is critical for decision makers at various levels (from farmers to policy makers): soil classification and distribution, soil fertility, degree of land degradation and suitability. A new cost and time effective soil mapping approach is needed to provide soil data. These data will help in improving natural resources management, formulate agricultural development plans and actions, and improve productivity while preserving natural resources. Information about the potential suitability of soils/land to different land uses is lacking. These are important to guide the decision makers to select and implement the optimum land use and management based on the biophysical potential. Furthermore, the integration of these information with the socio-economic factors in making decisions about land use is very important.

Nevertheless, vast area of the region has little importance from agricultural point of view and therefore investments in soil data collection and coverage of details soil data should be prioritized. The starting point is to set criteria, by local and regional experts, for selecting areas with tentatively high potential. Climate (rainfall and temperature), topography (mainly slope steepness), availability of water resources, accessibility might be used, among other criteria, to identify areas for detailed soil data acquisition.

New tools/approaches of soil mapping, incorporating GIS and remote sensing are needed to establish up-to-date soil databases. Proper training of national staff in building, maintaining and using these databases is essential to ensure sustainability of the investment.

1. Introduction to the NENA Regional Soil Partnership

Regional Soil Partnerships (RSP) were established among interested and active stakeholders to establish an interactive consultative process with national soils entities working in land resources, climate change and biodiversity, as well as with regional soil science societies and other relevant regional mechanisms under the various related conventions. Regional Soil Partnerships also build on existing regional networks or collaborative processes, linking national and local networks, partners, projects and activities to ensure that the partnership process is country-driven. The RSPs should provide guidance on regional goals / priorities and the required implementation mechanisms and should regularly review progress in reaching common objectives and targets. In particular, RSPs should facilitate links with national and local soil management programs and activities with a view to strengthening work on soils and to develop synergies with other relevant initiatives and activities.

The Near East and North Africa (NENA) Soil Partnership was established during the Inception Workshop on Regional Soil Partnership and MENA Soil Information, April 2012, Amman – Jordan (http://www.fao.org/globalsoilpartnership/en/). Participants from soil institutions and governments of ten countries presented their status in terms of soil information and soil activities as well as the needs and priorities that the regional partnership should focus on. The Amman Communiqué was prepared in which they fully support the Global Soil Partnership and expressed that there is need for strengthening the soil institutions through capacity development and investing in sustainable soil management practices.

This Conference was organized by the NENA Soil Partnership to:

1. Stocktaking on the status, needs and priorities for promoting sustainable soil management in the region;
2. Institutionalize the NENA Soil Partnership by setting its secretariat and steering committee;
3. Present the results and the gaps of the NENA Soil Information System Phase I;
4. Jointly define a roadmap for the implementation of actions at the NENA Soil Partnership.

2. National presentations on status of soil and land resources, and needs and priorities for sustainable soil management

2.1. Soil resources and sustainable soil management in Algeria

Atef Amriche, Ministry of Agriculture and Rural development

Background box	
Total land area	238 million km^2
Total agricultural area	42.9 million ha (18%)
Used agricultural area	8.5 million ha (20%)
Climate	Three types of climate: - Mediterranean climate (Coastal zones and Northern mountain) - Semi arid climate (highlands) - Arid climate (Sahara desert)

Country facts about Algeria are summarized in the background box. The most important problem pertaining to soils in the country is soil erosion. Erosion amounts and frequencies are among the highest in the world (between 2000 and 4000 ton/km^2/year). In addition, agricultural land degradation has rendered useless vast areas of most fertile soils, about 12 million ha (45%) of the Tellian zones are affected. Another major issue in Algeria is desertification. Desertification is strongly linked to drastic changes in the climatic condition for a long period of time. In addition, anthropocentric actions increase the degree of desertification, especially in the Steppe region. Salinity plays an important role in the western and southern regions of Algeria. Even in irrigated areas, one can observe an increase in salinity and/or sodicity at various rates. The loss of soil fertility can be explained by the intensive agriculture and monoculture regime, and is another major issue. Other problems include pollution, urbanization and the impacts of bad agricultural practices (i.e. overgrazing) on soils. The Algerian government aims to increase the durability of soil fertility, the maintenance of soil fertility and the production of land against degradation.

First, the country's soil data is very much outdated, it does not cover the entire territory, and it is very heterogenous. Indeed, the soil classification map (figure 1), only covers Northern Algeria and can only be used on a regional level. The "revitalization of the agricultural and rural sector" project of the MADR could provide a base document that would contain accurate information on soil potential.

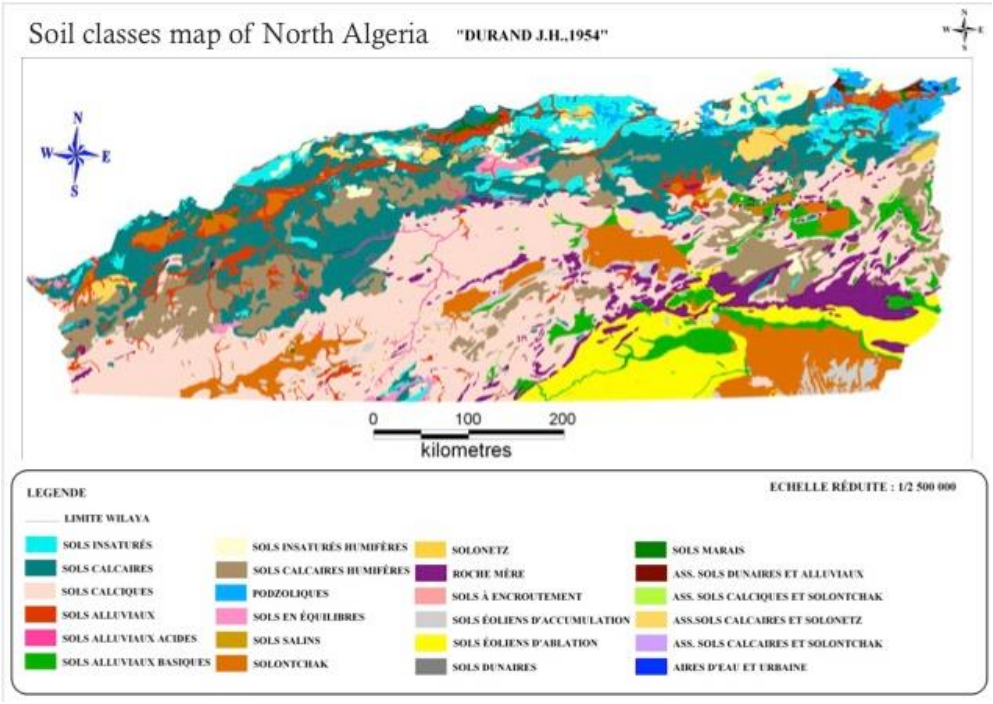

Figure 1: Map of current knowledge of soil resources in Algeria

The government has many goals to improve the soil quality of the country in order to increase food production and decrease food insecurity in the country. First, cover at least 70% of the national cereal needs through intensification of production, supplementing irrigation. As water is scarce, the implementation of an economic water management program would help coping with water loss. In addition, the government plans to modernize its agriculture in order to increase yields while preserving agricultural land against all forms of degradation.

2.2 Status of the agricultural land, soil and groundwater in Bahrain.

Ali Hameed Al Shabaani, Ministry of Municipality and Urban Planning

Country facts about the Kingdom of Bahrain are summarized in the background box. Bahrain produces mostly vegetables, fodder and exotic fruits (see table 1).

Background box	
Total land area	712 km^2
Total cultivated area (1997 numbers)	4762 ha (75)
Population	~1 million with rapid population growth
Climate	Extremely arid
Soil condition	Moderately saline to saline High gypsum and calcium carbonate content Texture: moderately sandy Low fertility potential
Soil pH	Alkaline (7-8)
Rainfall average annual rate	75mm with high evaporation rates

Bahrain has a high population density which is still increasing thanks to rapid urbanization and industrialization. To sustain its rapidly growing population, and due to low precipitation rates, the kingdom depends on the Damman aquifer system (70% of total consumption). This heavy reliance on groundwater leads to its over exploitation, level and quality decline, the loss of agricultural land due to salinization, decrease of environmental resources and sea water intrusions.

In addition to water regulation and quality problems, Bahrain must deal with poor quality soils. Its soils are shallow in depth, with water logging problems and a low fertility potential (i.e. organic matter of less than 1%, low Nitrogen and Phosphorous content, high gypsum and calcium carbonate content, alkaline soil, and a sandy texture which does not hold water nor nutrients). As table 2 shows, only 1% of the land is considered as good for agricultural purposes, while about 32% of it is classified as unsuitable.

Cultivated Land	Area (ha)
Vegetables	1110
Fodder and Others	781
Dates and Fruit trees	2410
Landscaping	308
Fallow and Abandoned	154
Total cultivated area	4762

Table 1: Land Use in Bahrain

Class No.	Class	Area (ha)	% of soil
1	Good	1055	1.49
2	Moderate	350	.50
3& 3D	Moderate, Liable to salinization	3100	4.39
4 & 4D	Moderately Low salt tolerant crops only	6250	8.85
5	Low	1750	24.82
6	Unsuitable	22473	31.8
7	Urban/ Industrial	19892	28.15
	Total	70660	100

Table 2: Soil Class in Bahrain

While the soil and water situation seems to be unredeemable, the government seems to be hopeful in finding solutions. Some of the proposed solutions are to use treated sewerage effluent for agricultural usage (TSE); drain leached salts; enhance quality and availability of soil data and information; create laws and regulations; increase consumer support; increase training opportunities; use alternate land for development; and encourage private sector investment in agriculture.

2.3 Legislation and Procedures to Protect Farmland form Deterioration in Egypt

M.H. Salem, N. Fathi, Kandil. Research Institute of Land, Water and Environment, Arab Republic of Egypt.

Background Box	
Climate	Arid and semi Arid
Total agricultural land	33,390 km^2
Sediment fertile land	22,260 km^2
Natural range land	27,300 km^2
Farmland per capita	0.12 km^2

Country facts about Egypt are summarized in the background box. The Egyptian farmland is divided into four main parts: the sedimentary land (Nile Valley and Delta), the desert reclaimed land, the rainfed and range land, and wetlands. Egyptian soil suffers from multiple pressures leading to its deterioration. Those main challenges are: increase in soil salinity and alkalinity due to sedimentation and bad irrigation; decrease in agricultural area due to an increase in urbanization; the contamination of agricultural soils due to high chemical and pesticide use; increase in erosion rates and advancement of the Saharan desert into agricultural lands; low average annual rainfall; overgrazing.

Challenges

The soils of the sedimentary Nile Valley and Delta regions mostly suffer from salinity and alkalinity. Indeed, 30% of the land area of the Nile Valley and Delta are affected by an increasing salt content, due not only by the sedimentation of the irrigation canals, but also because of the chemical use. Erosion also deteriorates the fertile soils in the Delta.

Aeolian Erosion and the active movement of sand dunes is responsible for a 25% crop productivity decrease and affects up to 16% of the old valley's territories.

Urbanization also has negative impacts on the Egyptian soils as it decreases the amount of agricultural land and increases pollution due to a lack of waste water treatment.

In addition, the economic and social conditions of the local population also affects soil's characteristic as the poverty trap encourages bad agricultural techniques such as overgrazing and depleting soil nutrients.

The Egyptian Government's solutions

The government proposes to improve soil fertility by restructuring the irrigation canals, drains, etc. In addition, it wants to introduce and use subsurface drainage to 5.1 million acres

in the Delta by 2017. Degraded lands could be improved through laser leveling. The government could also establish intensive courses to train young graduates, farmers and stockholders to modern scientific bases land management.

2.4 Status, priorities and needs for sustainable soil management in Iran

M.R. Balali, K.Eftekhari, A. Momenie and B. Eskandarie, Soil and Water Research Institute of Iran

Background box	
Total Land Area	1,648,000 km^2
Population	75 million
Average annual rainfall	~250 mm/year
Average annual evaporation	16 times that of rainfall (4000mm/year)
Climate	Arid and semi-arid
Five main physiographic units	Zagros mountains (West) Alborz Mountains (North) Khuzestan and South Coastal Plain Central Plateau Caspian Coastal Plan (North)

Country facts about Iran are summarized in the background box. The country uses four main kind of agricultural land use: Irrigation (30% of land use), rainfed agriculture (33%), fallow (31% with 10% being irrigated and 21% being rainfed) and orchards (6%). The research institute has classed the Iranian soils into seven categories. First, the arable land described by soil limitations, which comprises 6.5% of the total land area. Second, 21.5% of land is described as arable due to salinity and alkalinity. The third type of land, taking up 26.7% of the land, is the marginal arable land, due to its topography and level of erosion. Fourth, the restricted arable land due to drainage limitation, which makes up 15.6% of total land area. Fifth, the undetermined arable land makes up 11.3% of the total area. Sixth, 11.3% is considered to be non arable. Finally, 5% is classified as complexes, or cross beds of land classes. Iran, through the Soil and Water Research institute has produced numerous data maps of the country on soils and agriculture use, at the national, regional and local level (see figure 4) . It strives to produce even more refined maps with a higher resolution.

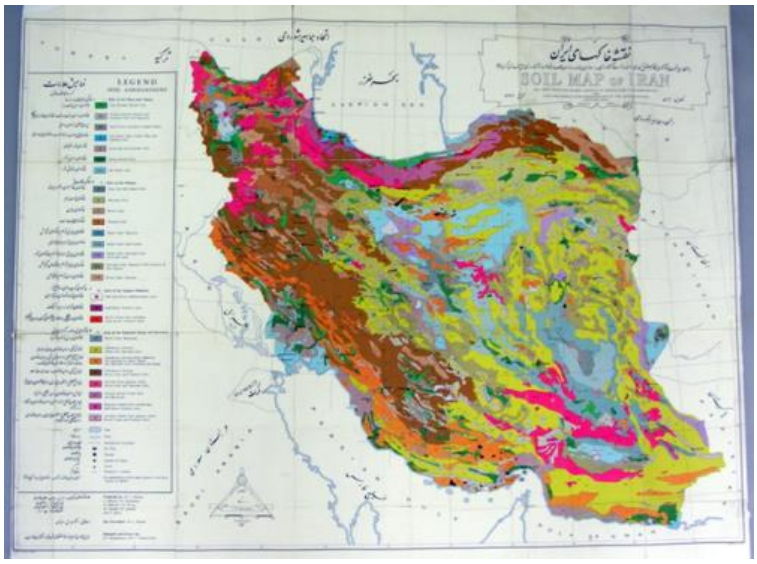

Figure 2: Soil map of Iran at 1: 2,500,000

Soil resource challenges

Iran has three main soil resource challenges: soil salinization, land use change, and soil fertility degradation. A study done in 2000 shows that 47% of land are non saline soils, 3% are slightly saline, 11% are moderately saline, 13% are strongly saline, and 26% are considered miscellaneous lands.

Major challenges of water and soil resources

Population growth induces an increase in food demand and therefore of agricultural production. However, there exists a legislative lack of soil laws and regulations. This makes it hard to control the influx of various inputs to the soil (i.e. sewage, fertilizers, etc) for agricultural use. Water resources limitations and lack of water efficiency in agricultural lands degrades the resources and leads to rapid soil fertility decline. This decline then induces an increase in salinity, a decrease in soil nutrient, and a decrease in soil organic matter. Finally the amount of cultivated lands decrease due to land use changes and the increasing difficulties to deal with cultivation.

Proposed solutions

First, scientific advancement must be made in order to determine leaching requirements for desalinization, acquiring knowledge of biofertilizer production, determining and documenting crop water requirements, etc. This should lea d to a reduction and prevention of the land salinity progress, prevent land use changes, protect soil fertility, and improve plant nutrition.

Priorities and needs

To make those changes possible, Iran has a list of priorities and needs. The first priority should be to get a better map resolution suggested at a scale of 1: 250,000. Soil surveys should be done to determine the exact levels and grade of agricultural land production. This would lead to a change of cultivation pattern based on land suitability.

Determination of implementation strategies

In order to deal with the soil problems, the research institute proposes to follow a short and a long term goal. The long term and ultimate goal deals with the conservation and increase of soil quality in the trend of sustainable production, food security, and environmental protection. In order to strive towards this, the short term goal is to create a foundation to the long term goal by establishing scientific and technical mechanisms.

To achieve those goals, monitoring of land use change as well as salinity, and soil fertility should be undertaken every five years. In addition, there is a pressing need to raise awareness of policy makers on the importance of soils. This campaign would hope to lead to the creation of a prosecuting law to be enacted by authorized by governmental land departments in tandem with soil independent organizations and specialists.

2.5 Status priorities and needs for sustainable soil management in Iraq

Dr. Iman Sahib Salman, Ministry of Agriculture Iraq/Baghdad

Country facts about Iraq are summarized in the background box. Iraq's agricultural land is made of 30% plains (including marches and lakes), 10% of terrain lands, 39% of desert, and 21% mountains. The four main problems pertaining to land and soil degradation in Iraq today are: salinity, soil erosion due to wind and water effects, biological degradation, and physical degradation. Since 60 to 70% of the Iraqi soils are saline, salinization is the main problem that the country tries to tackle.

Background Box	
Total land area	438,317 km^2
Agriculture land area	94,500km^2
Climate	Arid to semi arid
Annual precipitation	150 mm – 400 mm
Evaporation	> 2000 mm in summer
Temperatures	7 – 20 ^{0}C in winter 30 – 50 ^{0}C in summer

Soil salinity

Salinity is a major problem as it decreases agricultural yields (see Table 3) There are two main types of factors responsible for soil salinity in Iraq: anthropocentric actions (mostly the misuse of agricultural land) and natural actions (marine sedimentation, mineral weathering, groundwater salinity, and the effects of climate). The accumulation of free salt at the soil surface and/or profile affects plant growth and land use, and leads to a low productivity of agricultural land and desertification (dust storms). Those effects are enhanced by the climate induced water scarcity.

Soil salinity level	% yield
Non saline	100
Slightly saline	70-80
Moderately saline	40-70
Sever saline	0-40
Very sever saline	0

Table 3: Effects of salinity levels on most crop yields

Solutions

The ministry of agriculture has proposed a set of solutions to deal with soil degradation problems, and especially soil salinization.

The first solution is to create an irrigation project aiming to cover 750 ha during its implementation time of 6 to 8 years. This project would save 3.6 billion m^3 of water and aims to irrigate new lands, increase agriculture density and reclaim some of the most saline soils.

The second project proposed deals with soil salinity management in Central and Southern Iraq. This project would:

- Quantify the spatial distribution of salt affected land
- Qualify and quantify trends in river/drainage water and agricultural productivity
- Quantify and describe the relationship between groundwater levels, groundwater salinity and irrigation salinity
- Assess the current state of irrigation and drainage infrastructure
- Demonstrate best practices for different salt tolerant crops, varieties and fodders
- Develop approaches to improve soil, agronomic, irrigation water, and drainage management for salinity control
- Provide a socio-economic impact analysis of the changes

The third solution is to expend drip irrigation in greenhouses for vegetable production. This project would reduce the quantity of water used for irrigation, reduce the amount of labour and bushes, simplifying fertilizer use, and maintain suitable soil moisture.

Need for change

The development of the agricultural sector is dependent on the availability of fresh water and land. Diving priority to land productivity and salinity research is of high importance for the Iraqi Ministry of agriculture. This means: paying attention to land reclamation, developing soil and water appropriate management methods, changing to a conservation agriculture model, conserving water resources and developing information about water usage, and finally impose conservation and environmental standards related especially to soil and water usage.

The amount of knowledge on soil resources in Iraq is limited to detailed district maps covering 35% of the country at a 1:25,000 scale. The creation of a national map would help figure out where the efforts are the most needed.

Suggestions for a successful implementation of a regional partnership for the Global Soil Partnership

First, the GSP should select an appropriate and common soil classification system for all countries to use. Second, there should be training available on the application of the selected system. And finally, there should be a cooperation between bordering countries to check results, especially at the country borders.

2.6 Challenges and status in Jordan

Dr. Mahmoud Alferihat

Country facts about Jordan are summarized in the background box. Jordan aims to develop capacities on digital soil mapping, starting with the basis of soil legacy data rescue, sotring and upgrading national soil maps into the WRB system. It already has different soil maps at different scales following the FAO guidelines at different scales: 1:250,000, 1:50,000 and 1:10,000.

The main challenges posed on the soil resource in Jordan are: increase in population, diversity of its needs, land deterioration, soil erosion, lower land production capability, desertification, and unbalanced competition in land use.

Background Box		
Type of Land Use	Area/Km$^{2/thousand}$	%
Range land	72,137	80.8
Urban	9,820	11.0
Agricultural lands	5,267	5.9
Natural Forest	803	0.9
Reforestation	803	0.9
Water bodies	450	0.5
Total	89,280	100

2.7 Soil conservation and strategy for agriculture in Lebanon

Fatme Beydoun

Country facts about Lebanon are summarized in the background box. When looking at its soils, Lebanon faces many challenges including, but not limited to:

Background Box	
Total land area	10,452 km^2
Climate	Can be semi arid, arid, and arid to continental depending on the location

- Reduction area for agricultural land, forest, and land cover
- Desertification due to climate change and reduced rainfall
- Lack of water management and harvesting
- Contamination of soil and water resources due to excessive use of fertilizers and pesticides, as well as salinity build up
- Population growth putting stress on water resources and food security
- Inadequate training as well as iurban and land planning initiatives and projects

Lebanon is also not self sufficient: it imports 73% of plant needs and 27% of animal needs.

Solution

The first thing to do for Lebanon is to raise public awareness on the status and importance of soils. Only then can one promote and finance proper and efficient techniques for land and soil conservation. This will lead to research development on new productive varieties resistant to pest and diseases, and set up new regulations. The existing data should be updated and the farming system should be systematically monitored.

Stakeholders should estimate erosion in agricultural plots, develop a national action of priority actions such as combating desertification, and control the erosion process.

2.8 Status of Soil Survey and Soil Information System in Morocco

Dr. Rachid Moussadek, INRA-Morocco

Background Box	
Total area	710,850 km^2
Population	30 Million people

Country facts about Morocco are summarized in the background box. As population increases, so does its reliance on increasing agriculture output, hence on soil nutrient mining and organic matter. In Morocco, the land is distributed as such: 44% is uncultivated, 30% rangeland, 13% agricultural land, 8% forest land, 5% alfalfa.

Only 30% of national soil resources in Morocco are mapped and characterized at different scales, making a national soil map difficult. As for many other countries in this region soils are threatened by erosion (annual loss is evaluated to be 100 million tons), limits in soil depth, salinization (0.5 million ha are soil saline), surface sealing, rising of saline groundwater, reduction of soil drainage, soil compaction, loss of organic matter (the mean soil organic matter in Morocco is less than 2%).

To try to cope with those challenges, Morocco has set up the Soter project to create a morphometric landform description and standardize the methods and measures of soil attributes. The first priority is to create a national soil map before deciding how to proceed. To do so, the country will need better training of pedologists and technicians, as well as coordinating between scientists, researchers and the administration.

One of the first hands on and realistic solution is to reduce the soil depth problem by subsoling and stones removal. Indeed, those efforts could reclaim about 2 million ha in agricultural land.

2.9 Challenges and status of the soil resource in Oman

Nabeel ALBahrani, Director of Land and Irrigation Department, Ministry of Agriculture

Country facts about Oman are summarized in the background box. There are many reasons for land degradation in Oman, but the most important ones are: urban encroachment on arable lands, management of quarrying practices on land resources, soil erosion, soil salinity, soil pollution, and soil vulnerability to desertification. The Ministry of agriculture proposes to act against this land degradation through: soil studies, development plans, laws and legislation, development of conventional farming system projects, farmers training on how to protect farmland, and create stone walls to protect agricultural land from erosion.

Background Box	
Total area	309,500 km^2
Total agriculture land	2,220 km^2
Soil suitability for the intended land use	7,916 km^2
Moderately suitable	14,314 km^2
Not suitable	292,034 km^2
Precipitation	< 100 mm/year

2.10 Challenges and status of soil in Palestine

Imad Ghanma, Head of Soil Survey and Land Use, Ministry of Agriculture, Palestine

Country facts about Palestine are summarized in the background box.

The main soil challenges in Palestine are salinization, erosion, closing of the fertility gap, land degradation, water shortages and quality, and drought effects.

Background Box	
Total area	5860 km^2
Area of Gaza strip	360 km^2
Agriculture Land under irrigation	228 km^2 (19%)
Rainfed land	972 km^2 (81%)
Rangeland	972 km^2
Nautral forests	94 km^2
Area of land suitable for reforestation	320 km^2

Palestine has declared clear goals toward resource management activities such as stopping the deterioration of agricultural land, strive for better land management, creation of law and legislation, encourage investment in land reclamation projects, deal with agricultural extension activities, and make detailed soil surveys and land specification. To achieve those goals, the Ministry of Agriculture proposes to:

- Increase the protection of agricultural land by minimizing the effects of the separation wall between agricultural land and farmers (improving accessibility of farmers to land), reclaiming agricultural land, building roads to increase agricultural area, enhancing policies of desertification, erosion, salinization, pollution and urbanization, and setting up better land management policies.
- Improve productivity and sustainable land management by emphasizing and focusing on water harvesting and treatment techniques, desalinization, and soil fertility
- Create a soil map of Palestine in partnership with the Gaza Strip

2.11 Status, Priorities and Needs for Sustainable Soil Management in Sudan

Mohamed Ahmed Salih, Land and Water Research Centre, ARC, Sudan

Country facts about Sudan are summarized in the background box. Sudan's main challenges in terms of its country's soil resource are the effects of drought and desertification, salinization, soil fertility loss, and low soil organic matter concentration. Drought and desertification are induced by wind erosion, water erosion, low vegetative cover, etc. Already 3% of Sudan has been converted into desert but as much as 64% is threatened by desertification due to low rainfall and prolonged drought spells, as well as anthropogenic actions (i.e. forest cutting, overgrazing, monocropping, etc.). Salinity is present in 23% of Sudan's land area and is correlated to low precipitation and high evaporation rates.

Background Box	
Agricultural land	840,000 km^2
Saline Soils	23% of land area
Desert area	3% of land area
Climate	- Semi arid - Arid - Base desert - highlands
Precipitation rate	> 250 mm to 750 mm depending on climate

Solutions

First, the government should create a soil map, a land suitability map with climate change perspective, and a soil fertility map at 1:250,000. In addition, research should focus on climate change adaptation and mitigation technologies. Furthermore there is a need to combat desertification, improve soil fertility and conservation through appropriate crop rotation methods, capacity building to overcome present and future challenges.

2.12 Status, Priorities and Needs For Sustainable Soil Management in Tunisia

Hedi Hamrouni, Director of Soil Department, Ministry of Agriculture, Tunisia

Country facts about Tunisia are summarized in the background box. The main challenges related to soils in Tunisia are fertility, salinity, dealing with acid soils, water scarcity, erosion, low soil organic matter concentration, and urbanization.

Background Box	
Total land area	164,000 km^2
Total agricultural land	53,000 km^2
Total fertile land	37,000 km^2
Climate	Mediterranean and desert (6% sub humid, 16.4% semi arid, 77.6% arid and desert)

First, the fertility problems are mostly linked to the geographic position of the soils. In the North, most soils are acid. In the semi arid superior zones, soil pH is a problem as they are made out of limestone and retrograde phosphorous, mineralize organic matter, problem of trace element insolubility, and nitrogen

constraints. In the arid zones, mineral element concentration and soil quality are low. The desert zones' soils are made from sand and their irrigation is associated to soil contamination and toxicity. Second, soil salinity and water logging affect about 1.5 million ha in Tunisia (or 15,000 km^2). Third, soil pH is between acid and neutral due to their high limestone content. Fourth, water scarcity plays a role as the hyrdrogeologic system is fragile due to the variability and scarcity of rainfall. Fourth, erosion plays an important role on soils due to water, wind and urbanization effects and enhances soil salinity. And finally the soil organic matter percentage in most Tunisian soils are between 0 and 5.7%.

Background Box		
Classification	Area (ha)	Percent (%)
Land not suitable for use	38,917,985	85.44
Erosion by water (degradation)	5,070,608	11.13
Erosion by wind (degradation)	578,189	1.27
Saline Soils (chemical degradation)	37,089	0.08
Soil Sealing (physical degradation)	12,717	0.03
Land non affected (suitable)	933,658	2.05
Total Area	45,550,246	100

Solutions

The Tunisian government has put an emphasis on dealing with soil salinity and its monitoring through the creation of SISOL (Soil System Information). This project should generate knowledge of actual soil salinity as well as monitor it, and help decision makers. In addition, the government proposes to deal with soil fertility management issues with compositing campaigns, and to deal with soil erosion issues through promoting conservation agriculture.

2.13 Challenges and Status of Soils in Yemen

Dr. Azzenden Aljend, Land and Water Reclamation, Ministry of Agriculture, Yemen

Country facts about Yemen are summarized in the background box. Yemen has completed country wide works on soil resources to find the current status of land resources and land cover. The data found should be integrated into different country maps on soil, water and land cover. The main challenges in Yemen deal with urban encroachment on arable lands, impact of quarrying practices on land resources, soil erosion, soil salinity (especially inland and on coastal areas), and soil pollution.

Yemen needs to increase its generation on soil information and national monitoring capacities, protect range land, further develop water harvesting projects, and combat erosion and degradation in Agricultural lands.

3. Amman Recommendations

NENA Recommendation
Amman, 19 June 2014

We, the representatives of 14 NENA countries participating at the NENA Soil Partnership Conference held in Amman, Jordan on 17-19 June 2014, funded by FAO and jointly organized with the Ministry of Agriculture of Jordan, and in accordance to the Terms of Reference of the Global Soil Partnership, would like to:

- Inform that arable and fertile soils in the NENA region are limited in extension and thus require policies and actions to protect and manage them in a sustainable manner.

- Call the attention that soil degradation is a serious process that is affecting the soils in the region through their various forms such as soil salinity, soil erosion, soil pollution and soil sealing.

- Report that the degradation process is threatening the soil resources in the NENA region and thus is affecting food production and associated food security, sustainable development, biodiversity and ecosystem services and increasing poverty. The situation is being increased by climate change and unsustainable land management practices.

- Inform that the establishment and implementation of the NENA Soil Partnership is a unique opportunity for addressing the current challenges posed to soil resources in this region if to contribute to food security.

- Advocating for the following priorities in the region: promote the sustainable management of soils; restore degraded soils; boost soil fertility; halve soil degradation such as soil salinity and boost soil water storage; establish capacity development programmes in the various soil applications; strengthening educational programmes on soil sciences; raising awareness on the importance of soils to various stakeholders; support the establishment of a regional and national soil information systems using state of the art methods of digital soil mapping; support targeted soil research that address the challenges faced by soil users; develop and implement international, regional and national soil legislation; set up an harmonization process to harmonize methods, units and indicators of soil data and information, and encourage the establishment or reinforcement of networks soil scientists in the region.

- Recall that investment on soil resources has been very limited and therefore, the cost of no action is higher as the effects of soil degradation will hamper food security and the provision of various ecosystem services. Therefore, we invite and request all stakeholders in addition to the donors community to support these actions by contributing with resources for addressing these huge challenges.

To achieve these goals, the participants agreed to consolidate the NENA Soil Partnership by establishing a Secretariat hosted at the Ministry of Agriculture of Jordan and a Steering Committee that is composed by:

- Mr. Nabeel Al Bahrani, Oman
- Ms. Iman Sahib Salman, Iraq
- Mr. Rachid Moussadek, Morocco
- Mr. Mohammad Reda, Egypt
- Mr. Mahmoud Alferihat, Jordan, NENASP Secretariat

Also, we agreed to establish working groups for the five pillars of action:

Pillar 1: Mr. Hedi Hamrouni, Tunisia
Pillar 2: Mr. Ali Hameed Al Sabani, Bahrein
Pillar 3: Mr Mohmmad Husein, Egypt
Pillar 4: Mr. Rachid Moussadek, Morocco
Pillar 5: Mr. Imad Ghanma, Palestine

We agreed to start activities by developing implementation plans for the different identified priorities and pillars of action of the GSP. The successful implementation of these actions will directly contribute with the food security, climate change adaptation, sustainable development and overall well being.

We commit to make the International Year of Soils 2015 a successful foundation to pave the future for promoting the sustainable management of soil resources in the NENA region.

Mahmoud al farihat
Mohamed Ahmed Sabih
EZZadin M.A. Algonaidi
Mohamed Hussein El sayed Salem
imad Ghanma
Dr. wael Alrushdan
Dr. Iman Sahib Salman
En. Ahmad Atour
En Sulaiman Sawalha
En Sivas Tarawneh
Dr. Mohamed Reda Mahmmoud
En. Laith Aied AL. Qudah
Eng. Khaleel Al-Adwan
Eng. Munad Al Rhahalh
Dr. MOUSSADEK Rachid
Eng. Hedi HAMROUNI
Bahman ESKandar