SOIL CARBON

FOR A SUSTAINABLE AGRICULTURE IN AFRICA

http://reseau-carbone-sol-afrique.org

The "Soil Carbon Network for Sustainable agriculture in Africa" (CaSA): *an open scientific group for a better consideration of CSA in Africa*

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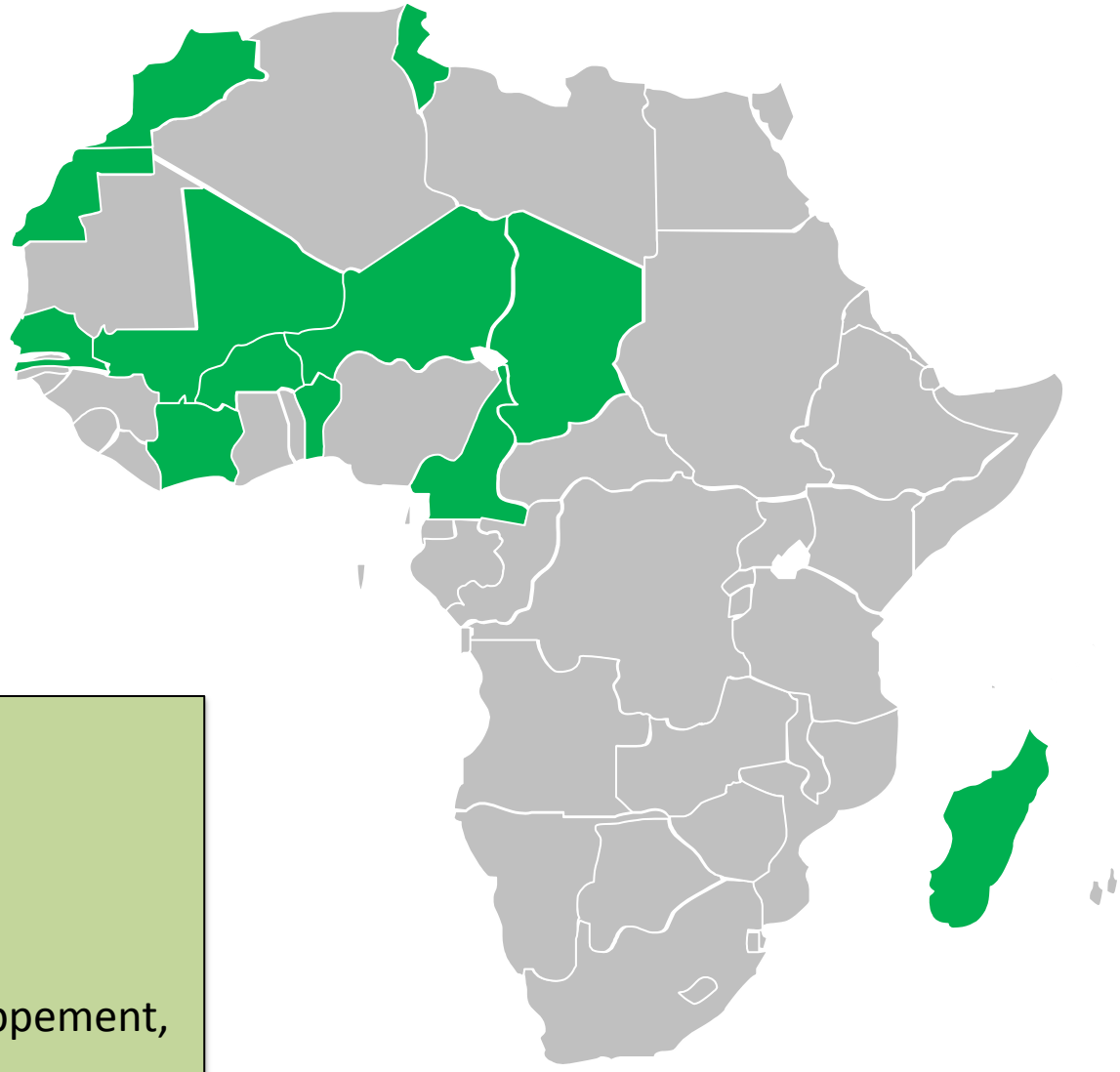
Badiane N., Amadji G., Balarabe O., Hien E., Konare H., Koné A., Taisso M., Gallali T., Razakamanarivo H., Rafolisy T., Andriamananjara A., Randriamanantsoa L., Rabenarivo M., Rasoarimalala O., Rabeharisoa L., Razafimahatratra H., Becquer T., Blanchart E., Bernard L., Rakotovao N., Ramaroson V., Ravonjiarison N., Aholoukpe H., Agbossou E., Yemadje L., Ganglo J., Gouro A., Assouma M., Bilgo A.0, Belem M.0, Ali M., Ko Awono M., M'biandoun M., Wirnkar Lendzemo V., Mouhaman A., Olina Assala J., Ettien J., Kassin K., Dibi K., Tondoh J., , Diouf A., Sall S., Sall A., Masse D., Garraud S., Bastard G., Balde M., Ba A., Lardy L., Komi A., Wele A., Abgassi A., Vayssiere, H. Guibert, B. Barthes, J. Chotte, A. Albrecht, M. Brossard, T. Chevallier, L. Cournac J., Blavet D., Clermont-Dauphin C., Deleporte P., Grinand C., Salgado P., Manlay R., Sabir M., Bockel L.,

Soil Carbon for a Sustainable Agriculture in Africa



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21 teams from 11 African countries and France

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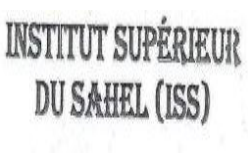

SOIL CARBON

FOR A SUSTAINABLE AGRICULTURE IN AFRICA

Why this network ?

A food crisis … in 21st century!

Why this CaSA network ?

A food crisis … in 21st century!

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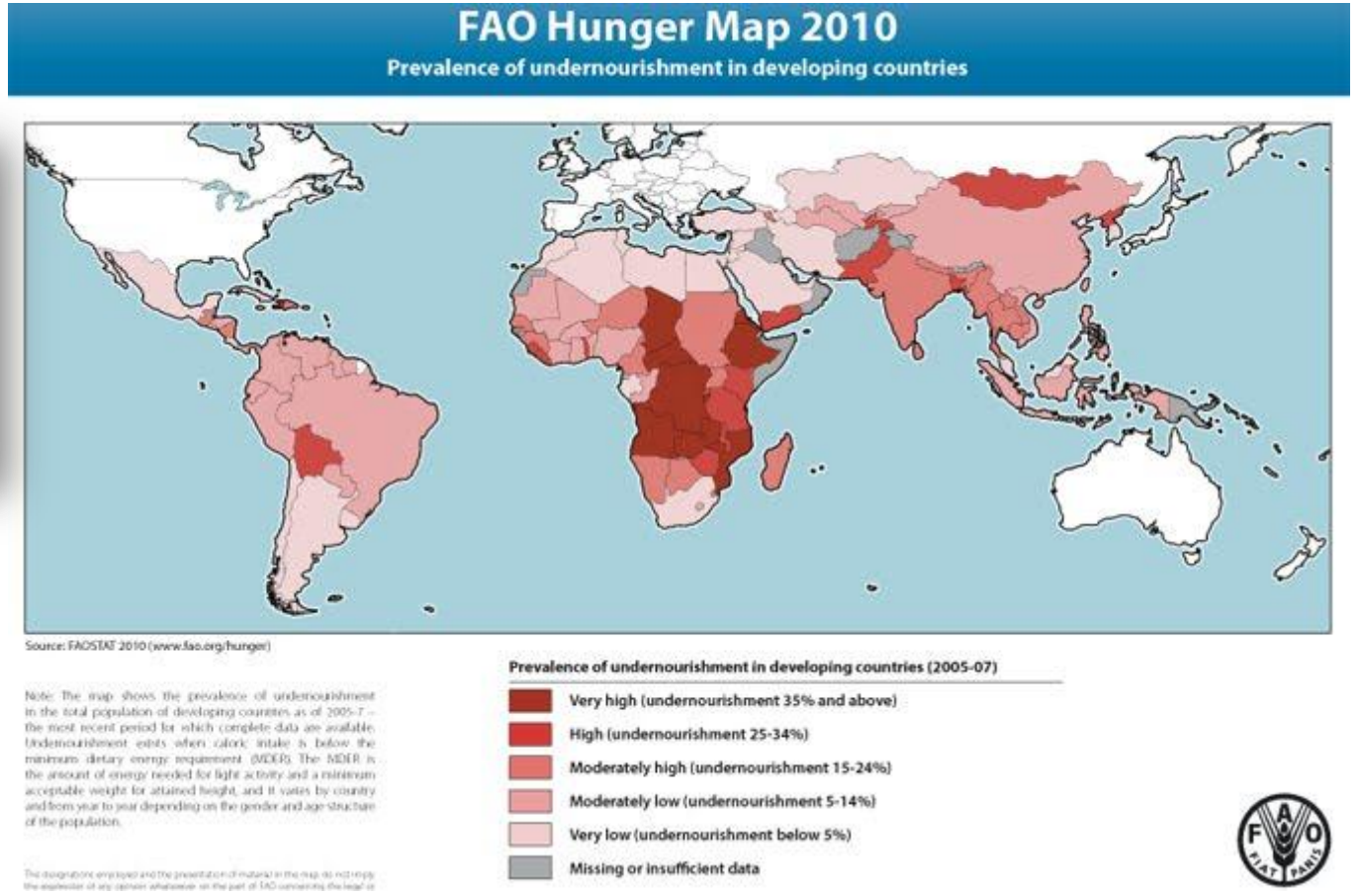


Why this CaSA network ?

A worldwide reaction !

Land and soils back at the highest level of international agenda:

- reform of existing process/institutions;
- new initiatives;
- new concepts and/or old ones being recycled

CFS Committee on World Food Security

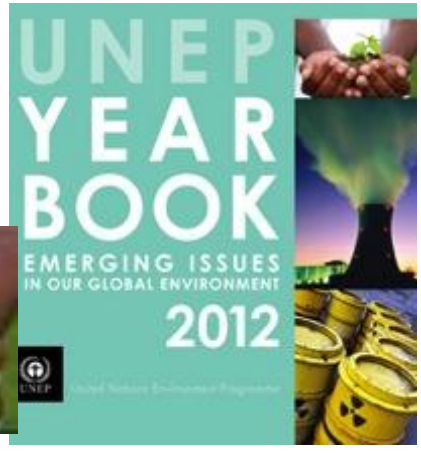
GBEP Global Bioenergy Partnership

CLIMATE SMART Agriculture

GLOBAL SOIL PARTNERSHIP

World Soil Day

HLPE High Level Panel of Experts



ZERO NET LAND DEGRADATION

THE CHANGWON INITIATIVE

itps INTERGOVERNMENTAL TECHNICAL PANEL ON SOILS

UNCCD SPI Science - Policy Interface

ipbes

First GLOBAL SOIL WEEK SOILS FOR LIFE

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Land and soils back at the highest level of international agenda:

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Agriculture (and land and soil aspects) gain attention in all UNFCCC-related agendas

ADB afd European Bank European Investment Bank IDB IFC International Finance Corporation KFW NEFCO

International Financial Institution Framework for a Harmonised Approach to Greenhouse Gas Accounting

Climate Bonds Standard and Certification Scheme

Climate Bond Certified

Developing eligibility criteria for AFOLU-related investments

Why this CaSA network ?

Soil … basis of agricultural activities !

Soils = main support of agricultural activities and forestry

➔ **non-renewable resource and needed to be preserved**

Africa context …

… Other issues in Africa ?

Large majority of people are smallholders
Low level of fertilisation (mineral and organic)
Little equipment and infrastructures
Poor water control

Extensive practices

Demographic pressure, climate change impacts …

Increase of the pressure on soils …

Africa context …

… What solutions ?

Promoting sustainable agriculture based on optimum management of soil organic matter

➔ managing soil organic carbon.

Agroecology

CLIMATE SMART Agriculture

↗ Soil organic carbon = ↗ soil fertility, soil productivity

↗ Soil organic carbon = ↗ soil C sequestration , ↗ mitigation of GHG emission

CaSA network…

Mobilisation of African and European researchers to promote soil carbon sequestration for a sustainable management of soil fertility and productivity

Network building and strenghtening … from 2010

1 Round table and 2 workshops:

2010: Round Table in ICID, Fortaleza, Brazil

2011: Workshop Ifrane, Morocco (Methodological aspects)

2012: Workshop, Dakar, Senegal (Network formalisation)

Fortaleza, Brazil (August, 2010) : Round Table in ICID 2010

Researchers from different programs and projects have organized together a round table ...

CORUS

RIME-PAMPA

PROGRAMME GESSOL

RIPIECSA

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

FFEM

Liberté • Égalité • Fraternité RÉPUBLIQUE FRANÇAISE MINISTÈRE DES AFFAIRES ÉTRANGÈRES

PEPITES

AGENCE UNIVERSITAIRE DE LA FRANCOPHONIE

Round Table

Carbon sequestration in arid and semi-arid regions

ICID 18 2010

www.icid18.org

Second International Conference on Climate, Sustainability and Development in Semi-arid Regions (*ICID 2010*)

Local: Centro de Convenções do Ceará - Av. Washington Soares, 1141 - Fortaleza, Ceará

Data: 16 a 20 de agosto de 2010

Morocco

Morocco, Ifrane (May 2011) : Workshop : What appropriate methodology for soil organic carbon assessment and mapping ?

Workshop

«*Climate Smart Agriculture in Western Africa*»

Dakar, 8 and 9 May 2012

Senegal, Dakar (May, 2012) : «Climate Smart Agriculture in Western Africa » : sharing of experiences, teaching and research points of view between researchers from African and European countries and civil society organisations …

CaSA network creation …

Advocacy for RIO +20

PLEADING to give African soils the right place in the "The future we want[1]"

Declaration of the network« *Soil carbon for a sustainable agriculture in view of climate changes in Africa* »

Challenges

Agriculture is facing a number of future challenges, especially related to climate change. It is recognized that soils are a non-renewable resource in the short-term. Therefore, it is necessary to preserve the soils as they provide crucial environmental services. Such services are food production, biomass, water filtration, carbon sequestration, biodiversity and conservation. The organic soil carbon is an indicator of soil quality and productivity, two qualities to ensure food security. In order to achieve and assure such variables, it is essential to implement a more sustainable agriculture. This is an agriculture favoring an alternative management of production systems guaranteeing a high organic matter and soil carbon.

Such production systems are advocated in strategic agriculture development plans of African countries. For example, the Comprehensive Africa Agriculture Development Programme (CAADP[2]) was adopted by the New

different countries and stakeholders of civil society working in Africa gathered to discuss and share their experiences.

Unanimous decision of the participants

What is necessary?

- To reaffirm that soil is a crucial support for production systems;
- To highlight that preserving the soil carbon content is essential, especially in arid and semi-arid regions;
- To quantify the impact of management practices on carbon sequestration in the soil, for various African pedoclimatic conditions;
- To promote the linkage between research institutions, civil society and development organizations;
- To facilitate the dissemination of scientific results for decision makers, civil society and farmers;
- To reinforce the expertise and training capacities of teams dealing with soils.

What are the research priorities?

RIO+20
United Nations Conference on Sustainable Development

Rio de Janeiro, Brazil • June 2012

Signatories are also asking to support the collaboration and the synergy between research and development, e.g. joint collaborations between NGOs, the private sector and research institutions.

Signatories are requesting negotiators from different conventions (Climate, Desertification, Biodiversity) to acknowledge the integrating role of soils. Indeed, the implementation of local solutions for smallholders can bring solutions for global challenges and threats.

Based on above evidences, the participants of the Dakar workshop have decided to create a network entitled

«Soil carbon for a sustainable agriculture in view of climate changes in Africa»

This network will work at the interface of existing networks and programmes[5].

The objectives of CaSA

To replace soil and soil carbon as the central component of sustainable agricultural systems.

Maintaining soil carbon is essential, particularly in arid and semi-arid regions

Quantification of management practices impacts on **carbon sequestration in Africa**

Promoting research in **collaboration with civil society** and development agencies

Facilitating the **access of research results to policy makers** and to improve the dissemination to civil society and farmers

The objectives of CaSA

But also :

To develop African **experts** on global change issues and their impacts on agriculture and sustainable development;

To share : research, trainings , data (exchanges of within the network)

Current activities …

Harmonization of methodology for the characterization of soil C between network members;



Methodological book

Quantification of carbon sequestration.
Analysis and valorisation of the data available from members of the CASA network

Book on « Soil carbon sequestration »

Data sharing and structuring
Data catalogue

Overview of data available in the network

Oil palms

Cover crop

Maize

Legume effect

Tree plantation effect*

ΔC1 =

*

ΔC2 = 534 ‰

Legume cover effect*

ΔC

ΔC1 = 74 ‰

Dj

Barthès et al., 2004

Book on « Soil carbon sequestration by sustainable agriculture in Africa »

Manure

Urban organic waste

Compost

Organic fertilizer

Cloves + Rice

Agroforetry

ΔC1 = 21 ‰

ΔC2 = 86 ‰

ΔC3 = 103 ‰

ΔC3 = 200 ‰

The current activities …

Training and Communication

Workshops

Benin

Ivory Coast

AfA 2014
Agroecology for Africa

International conferences

International conference

Agroecology and Sustainability of Tropical Rainfed Cropping Systems

03 - 07 November 2014, Antananarivo – Madagascar

« Soil, Forest and Agriculture : what are the challenges to face climate change in Madagascar ? »

Side Event of « Our Common Future under Climate Change »
Labelled by General Secretariat of COP21-CMP11/Paris 2015

22nd June 2015, Antananarivo, Madagascar

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Thank you for your attention

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