



Food and Agriculture
Organization of the
United Nations



4th Workshop of the International Network of Black Soils

Progress of the INBS in 2022

Ivan Vasenev, INBS Chair
Yuxin Tong, INBS Coordinator



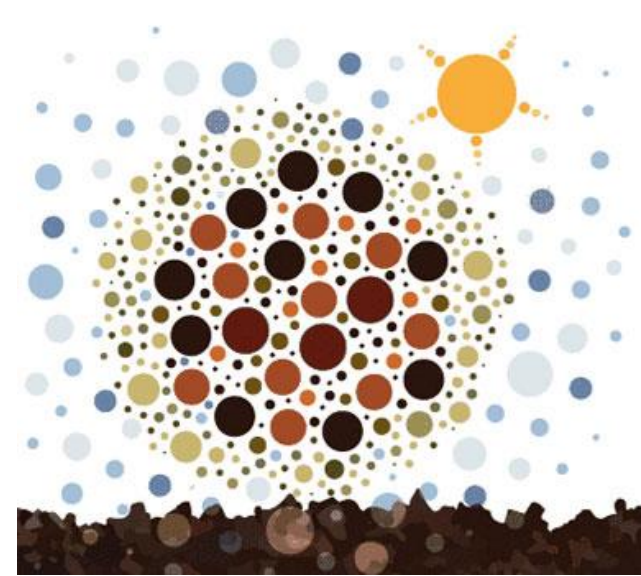
30 March 2023



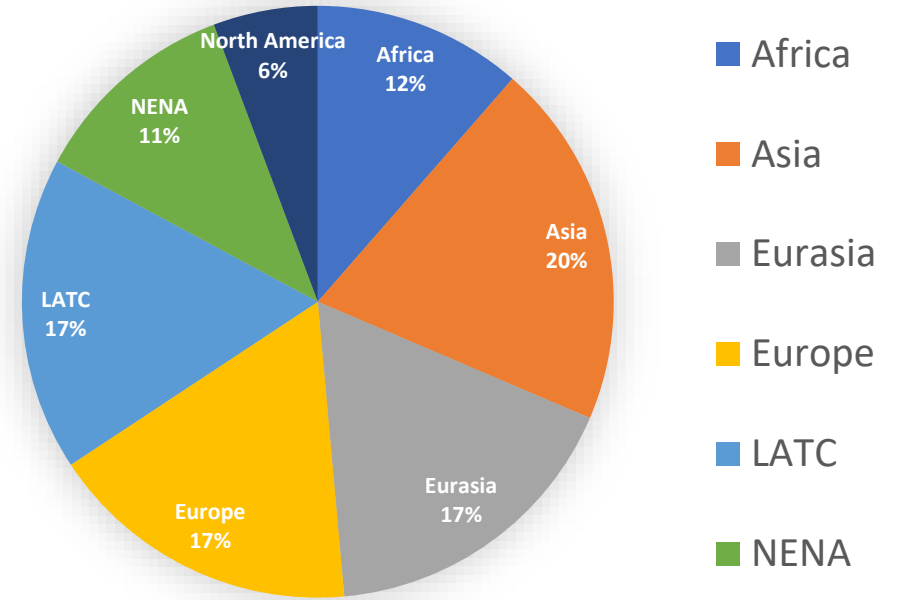
Launch of INBS

- Considering the great importance of Black soils for food and environmental security and their risk of severe degradation, it has become crucial to promote their conservation and sustainable profitable use,
- And to unlock their potential in the longer term to support food security while protecting the environment and mitigating climate change.

➤ On the basis of recommendation of the FAO's **Global Soil Partnership (GSP)** on the UN's Sustainable Development Goals (SDG) and the discussions and decisions from the **Global Symposium of Soil Organic Carbon**, the **International Network of Black Soil (INBS)** has been launched in Rome in March 2017.



Members of INBS - 34 Countries and 1 Union

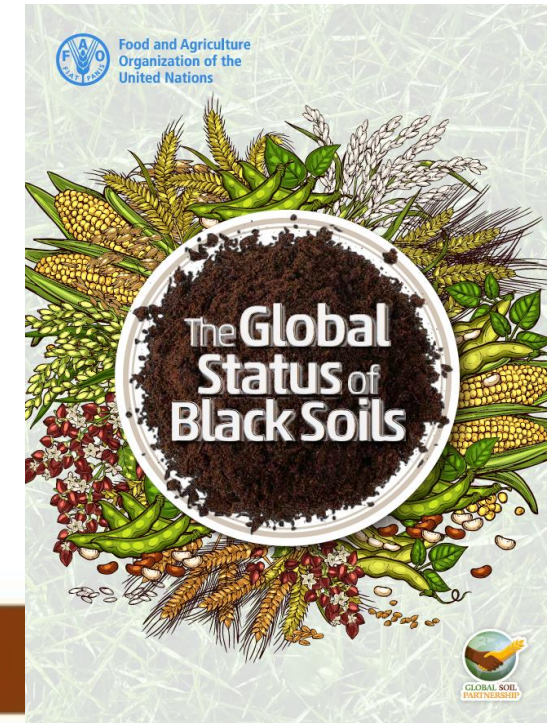
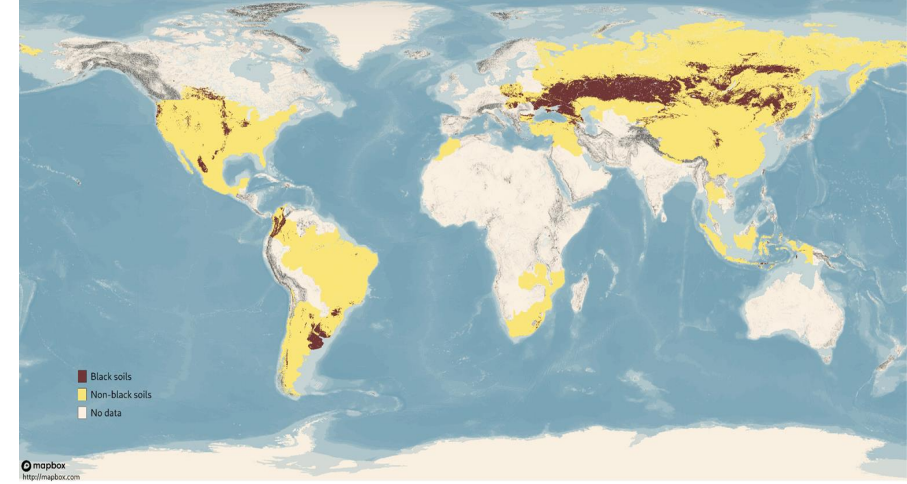


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Key outcomes of the INBS 2022

- Developed and launched the **Global Black Soil Distribution Map (GBSmap)** ;
- Developed and launched the **Global Status of Black Soils Report**;
- Established the **International Research Institution of Black Soils (IRIBS)** .



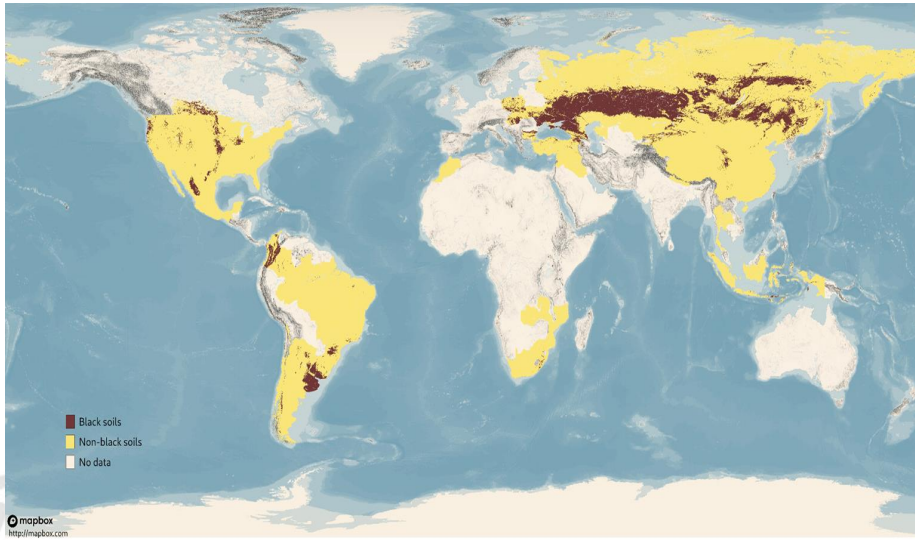
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MAPPING BLACK SOILS

GBSmap Training

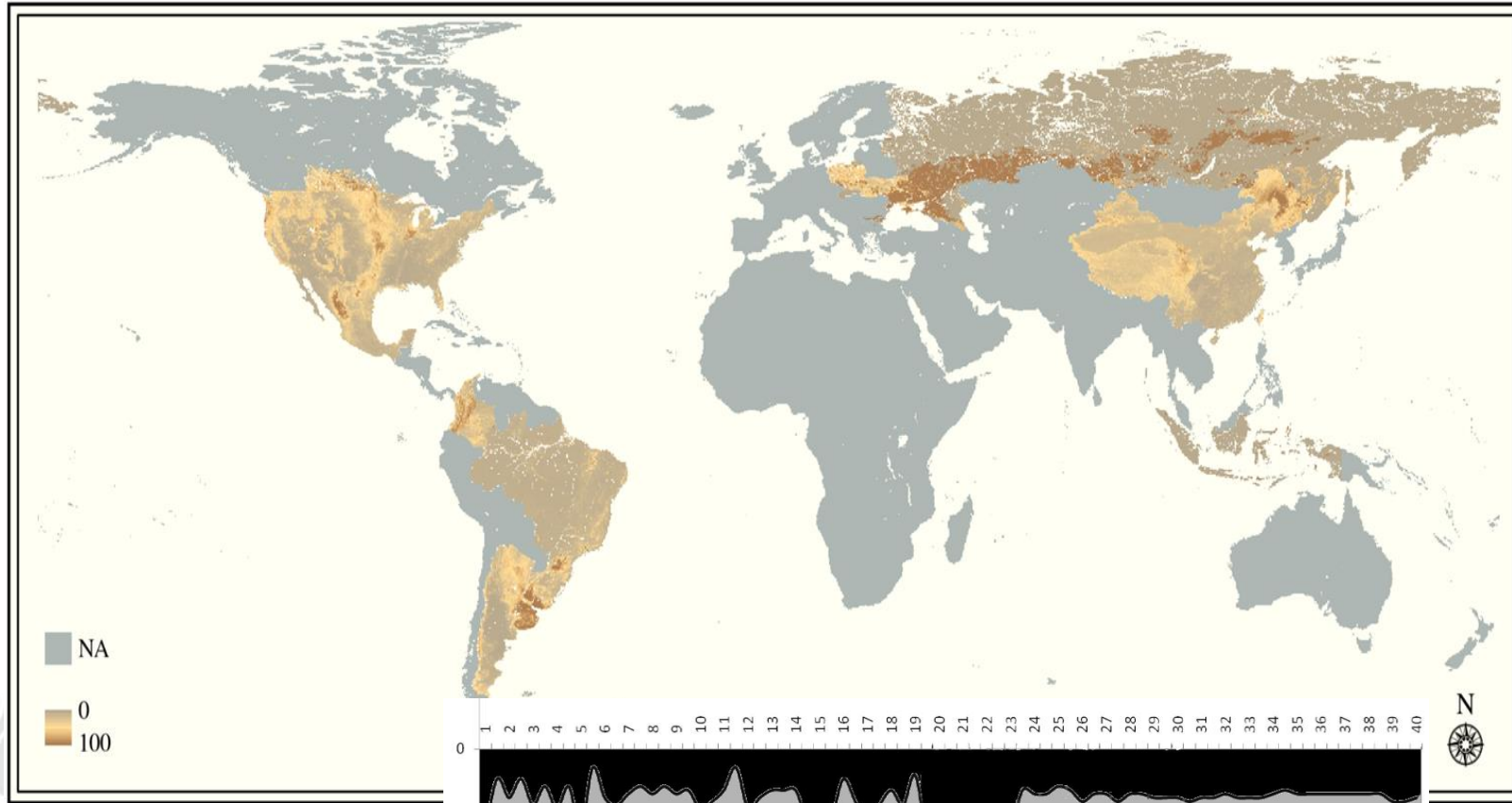
INBS Countries + one-to-one support sessions



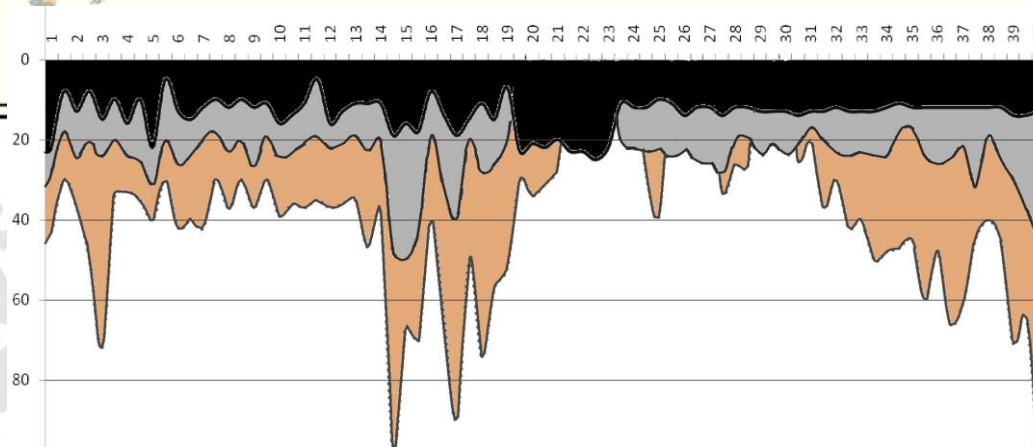
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NATIONAL MAP SUBMISSIONS

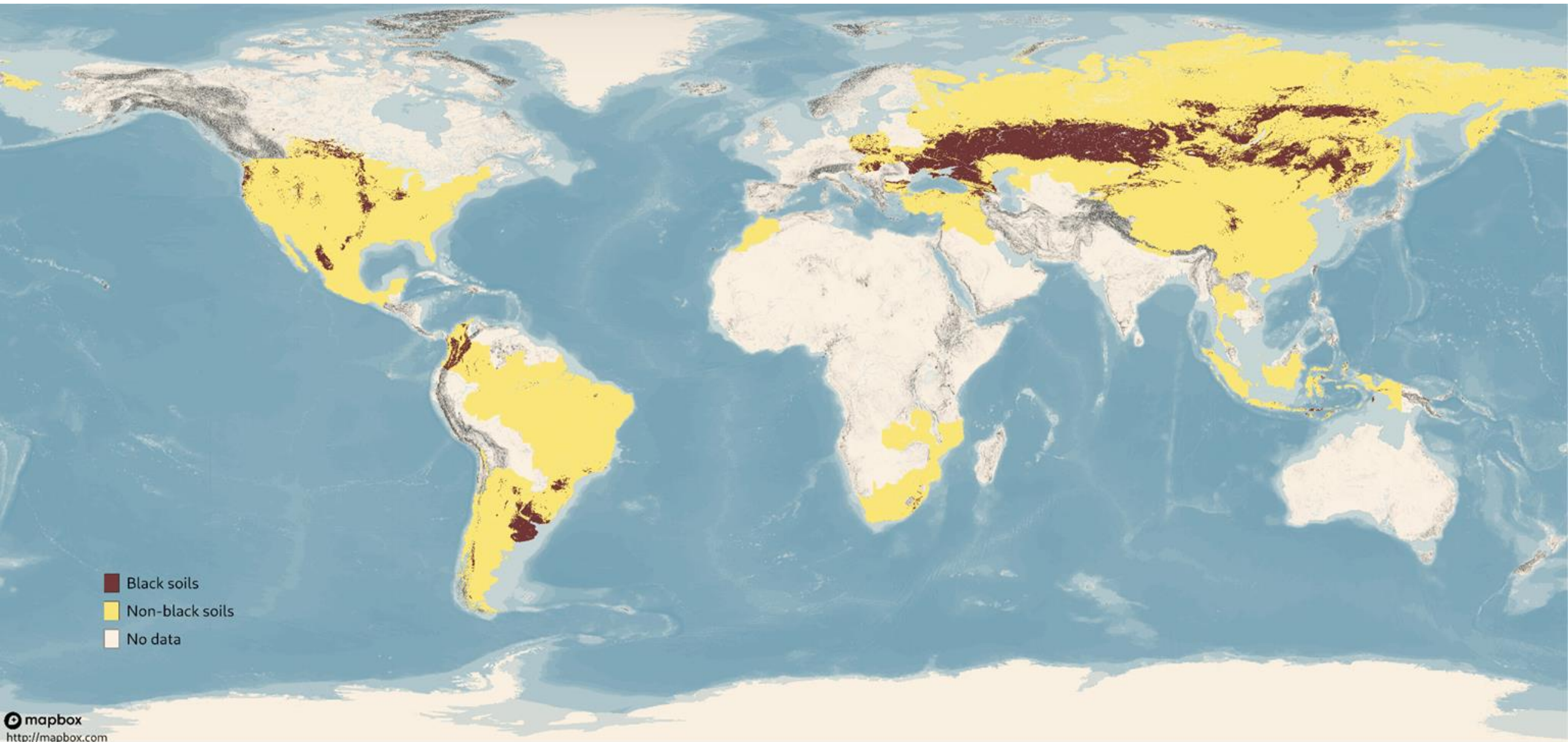


Black soil probability



1. Argentina (probability map)
2. Brazil (probability map)
3. Bulgaria (detailed polygon maps)
4. Canada (probability map)
5. China (probability map)
6. Colombia (probability map)
7. Indonesia (detailed polygon maps)
8. Mexico (probability map)
9. Poland (probability map)
10. Russian Federation (detailed polygon maps)
11. Slovakia (detailed polygon maps)
12. Ukraine (probability map)
13. United States of America (probability map)
14. Uruguay (probability map)

Global Black Soil Map v.1.0 (INBS Members) → GBSMap v.1.n → GBSMap v.2.n →





725 million hectares

Global Area of Black Soils

5.58%

of Global Land Area

Russian Federation holds
326.8 Mha of Black Soils

86% of Moldova is Black Soils

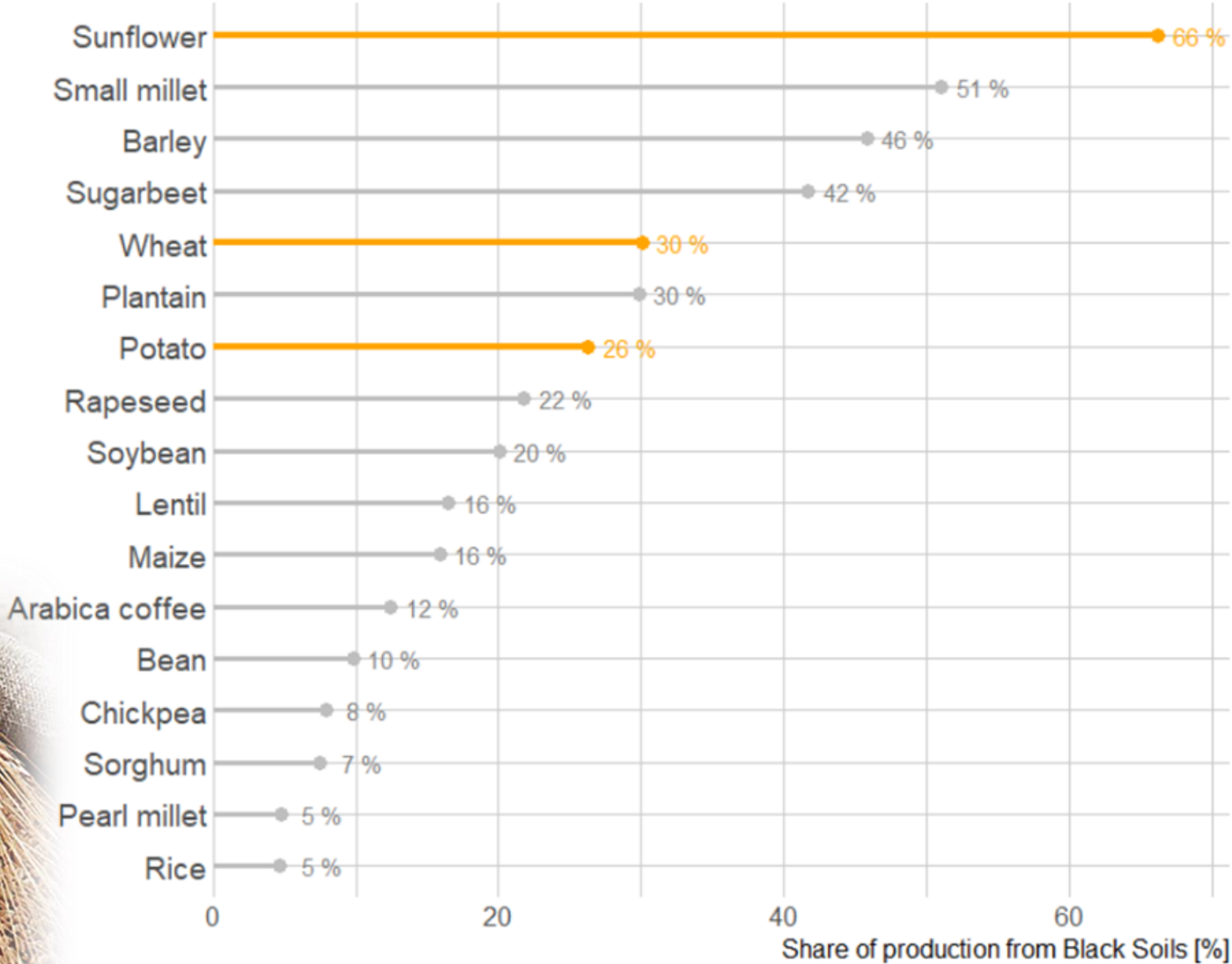
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BLACK SOILS FEED THE WORLD

They not only sustain **people settled on them** but also the rest of the world through exports. Key for **food security** and the **global economy**, a significant share of oilseed, cereal, and tuber crops are cultivated in black soils.

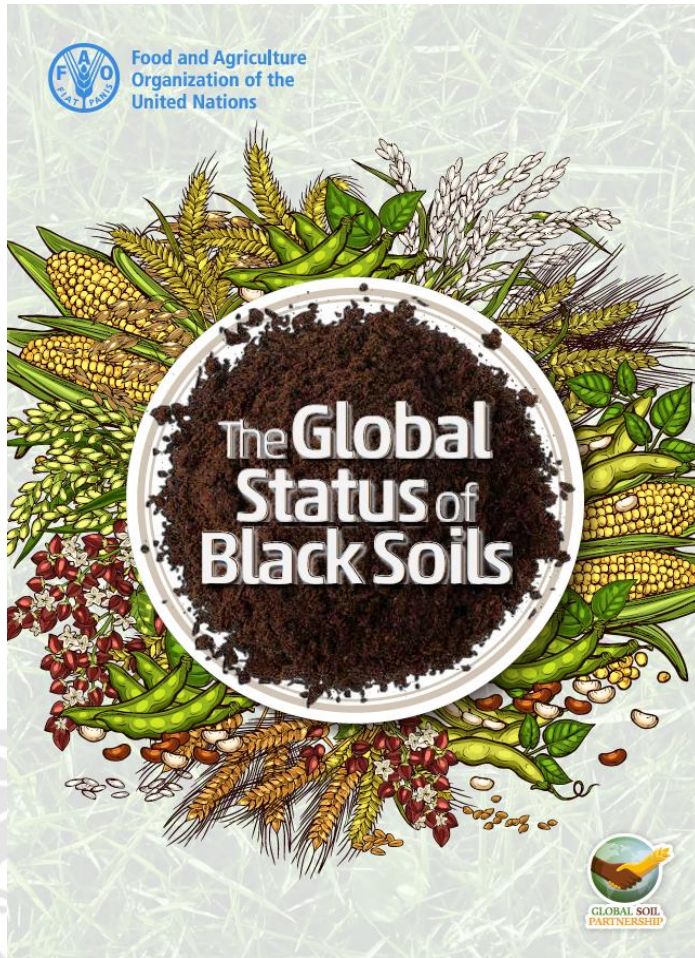
Globally, more than 66 % of sunflower seed, 46 % of barley, 42 % of sugarbeet, 30 % of wheat and 26 % of potato outputs are harvested from Black soils.



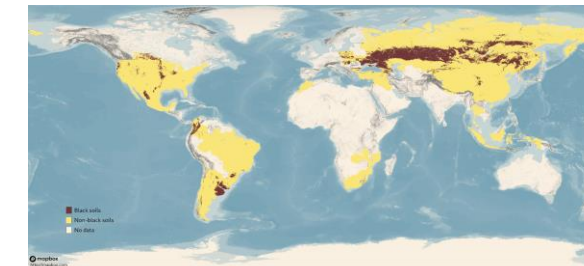
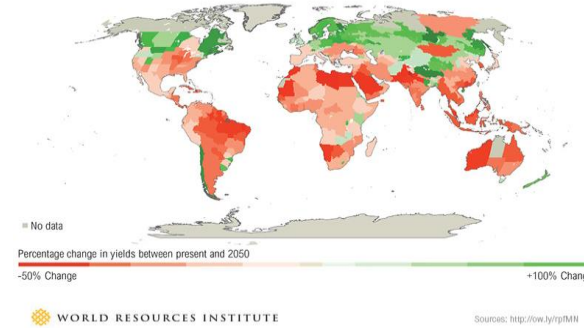
Global Spatially-Disaggregated Crop Production Statistics Data for 2010 Version 2.0



The intention of the Global Black soil report is:



- to raise awareness on the importance of this limited natural resource (black soils);
- to understand black soils' distribution and status;
- to provide key information that will give decision makers to promote the sustainable use and management of Black soils with Best available practices.



Информационно-оправочная система для прогнозирования урожайности твердых пшениц

Языки: Русский English

Заполните разделы:

- Выберите Ваш район
- Данные по климату
- Откажи соргов
- Прогнозируемый урожай

Параметры поля

Выберите сорт твердой пшеницы

Гул

Выберите дату посева

26-04-2021

Выберите доминирующую экспозицию склона на поле

Южные

Выберите тип почв доминирующих на поле

Черезали

Максимальный уклон на поле в градусах

Прогнозируемый урожай

Урожайность определяемая по приходу ФАР и температуре воздуха, т/га

Урожайность: 2,06, т/га

Масса стеблей: 2,5, т/га

Масса листьев: 1,38, т/га

Урожайность определяемая по запасу продуктивной влаги, т/га

Урожайность: 1,87, т/га

Масса стеблей: 1,76, т/га

Масса листьев: 0,92, т/га

Урожайность: 1,86, т/га

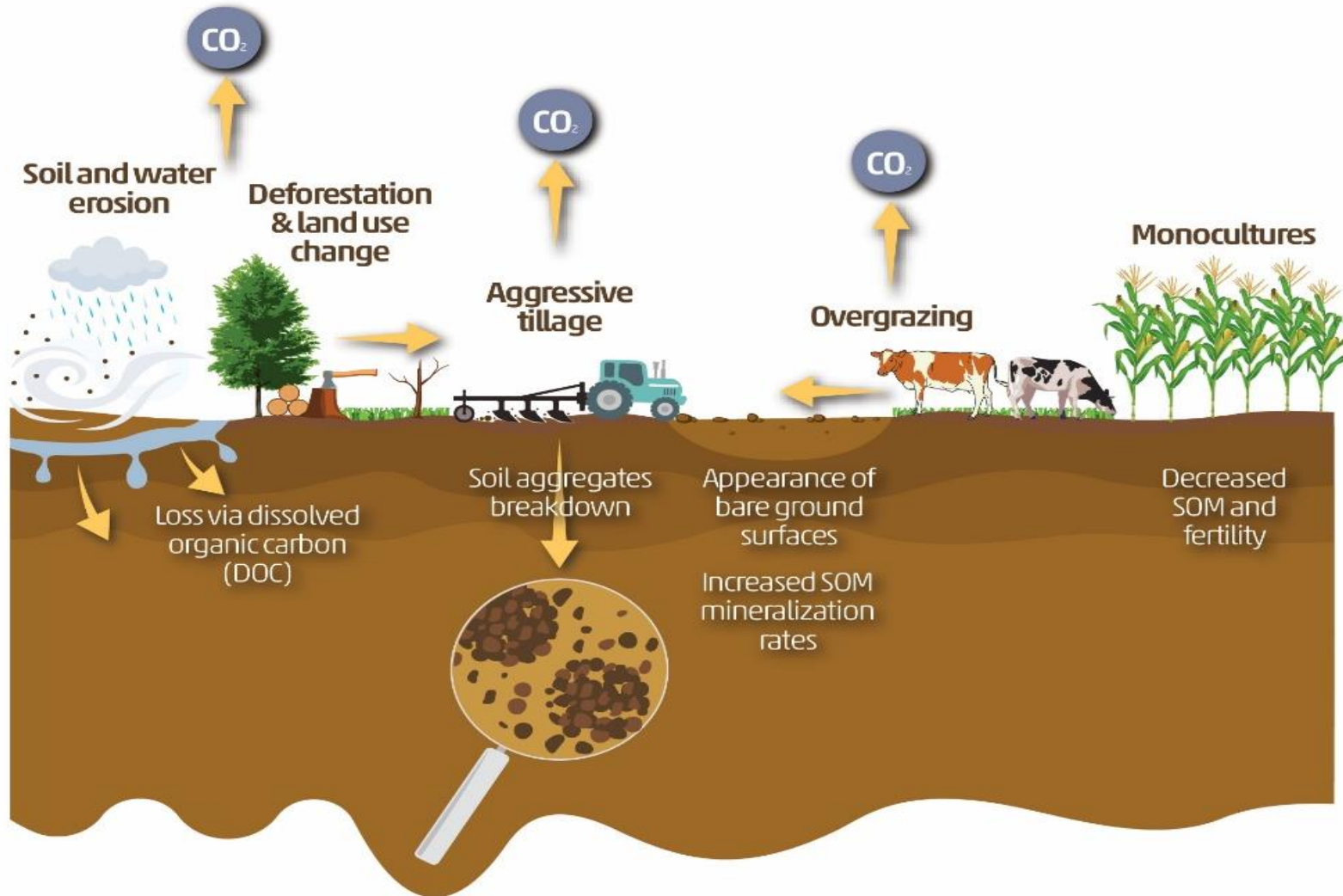
Потенциальная урожайность с учетом временной динамики состояния лимитирующих факторов по декадам вегетационного периода

188 soil scientists from **31 countries** contributed to the report with their best knowledge on status, challenges, management, conservation, and monitoring of Black soils.



How are Black Soils threatened?

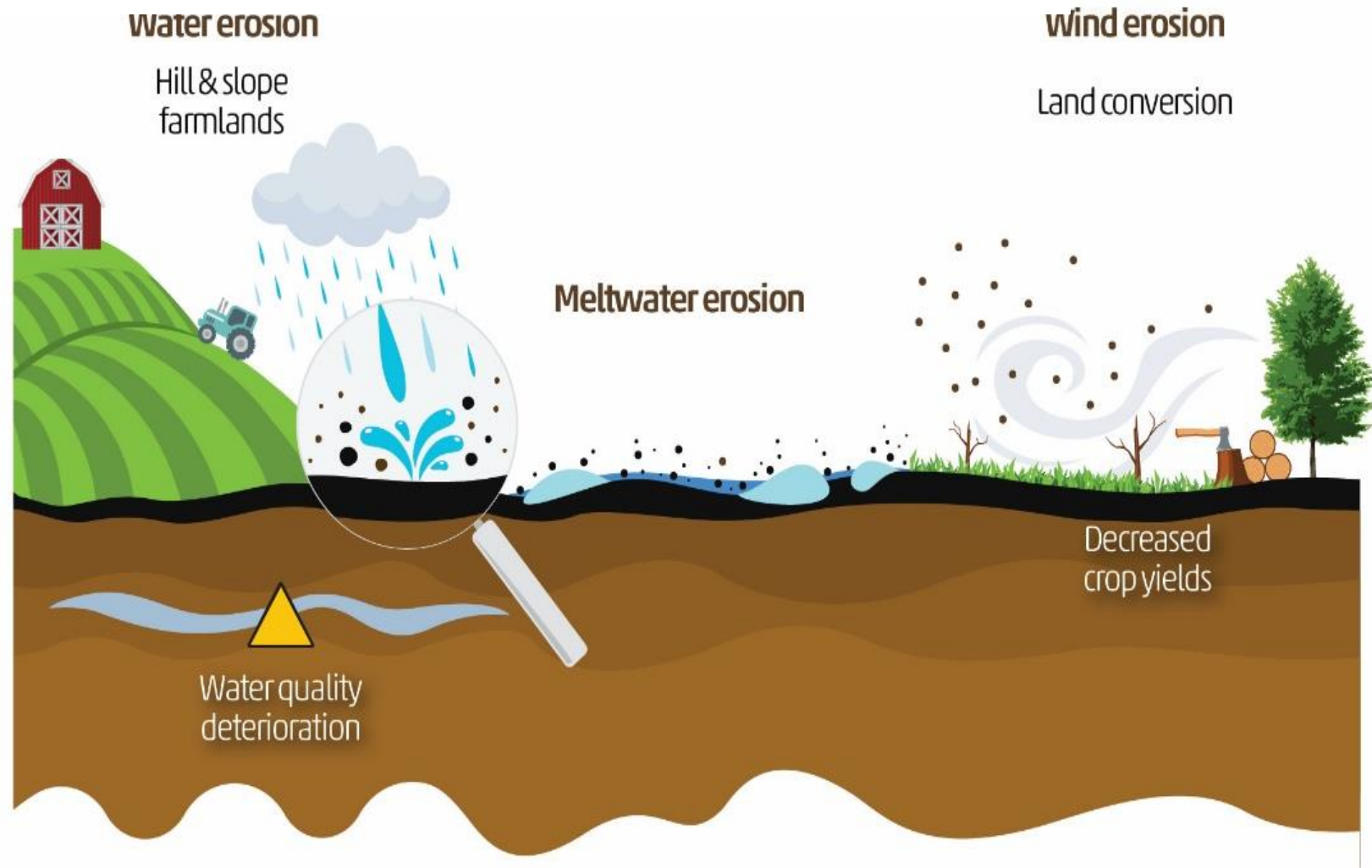
Main reasons for **SOC loss**



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How are Black Soils threatened?



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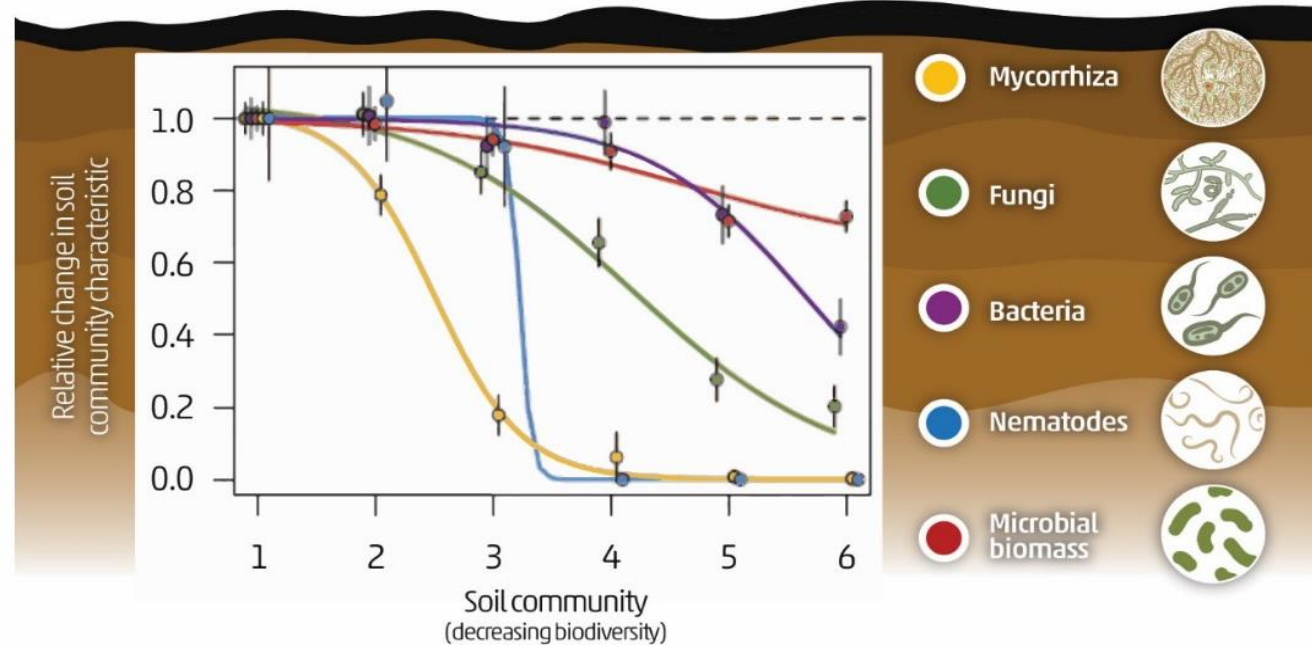
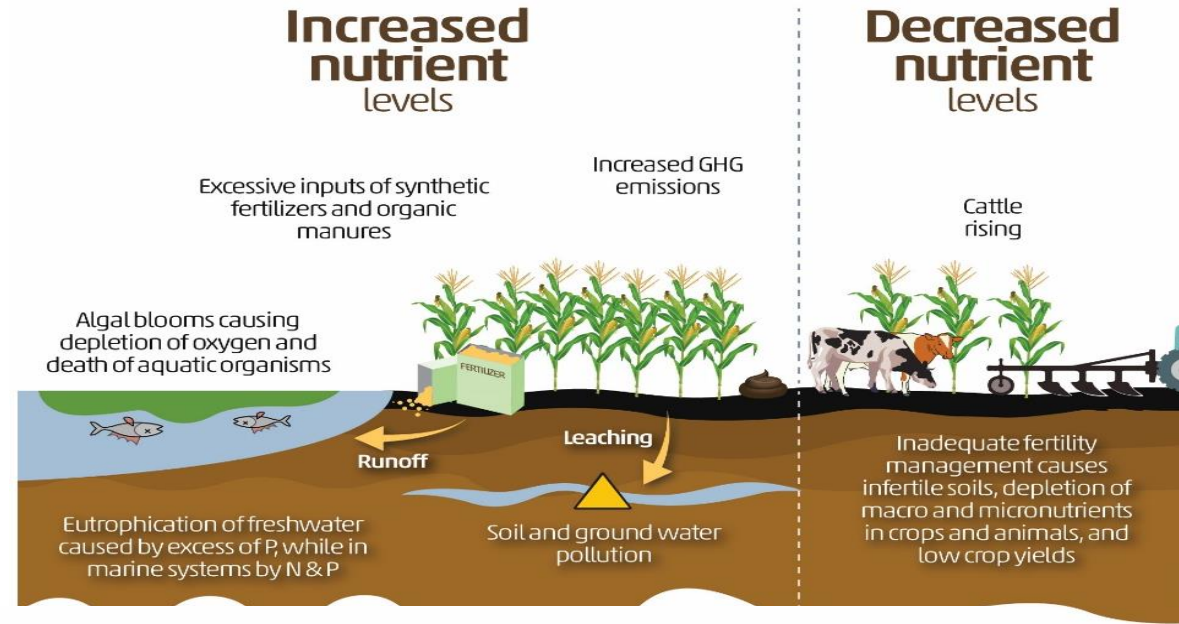
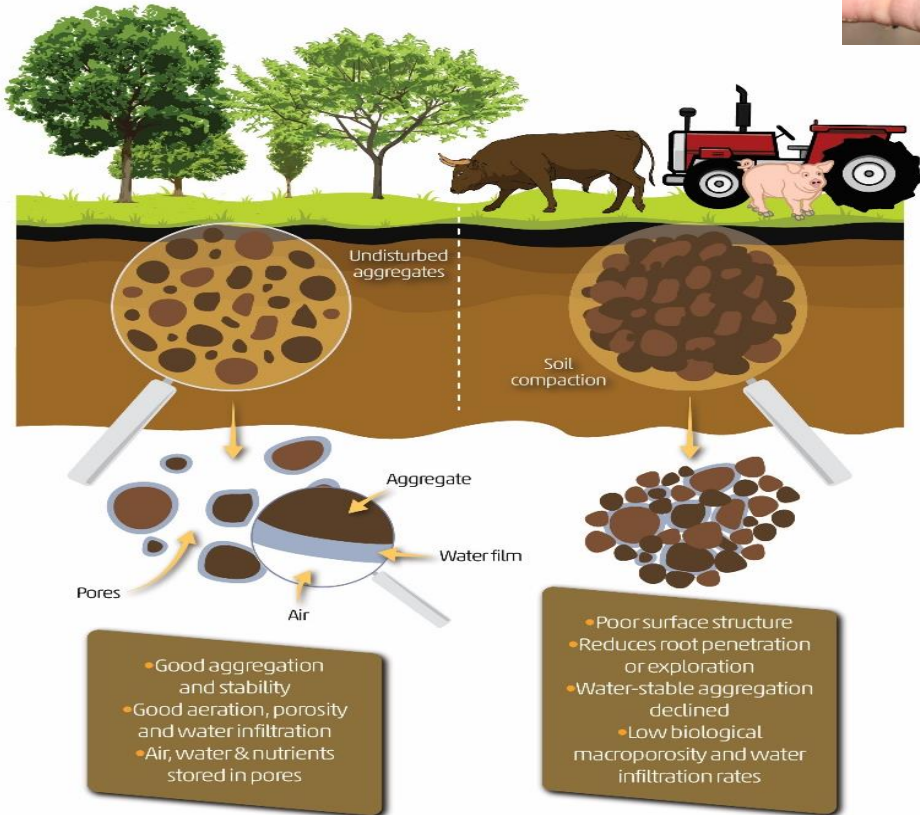


Wind erosion in Liaoning province, China. Zhiqiang Zhou.

How are Black Soils threatened?



Good soil structure vs. compacted soil



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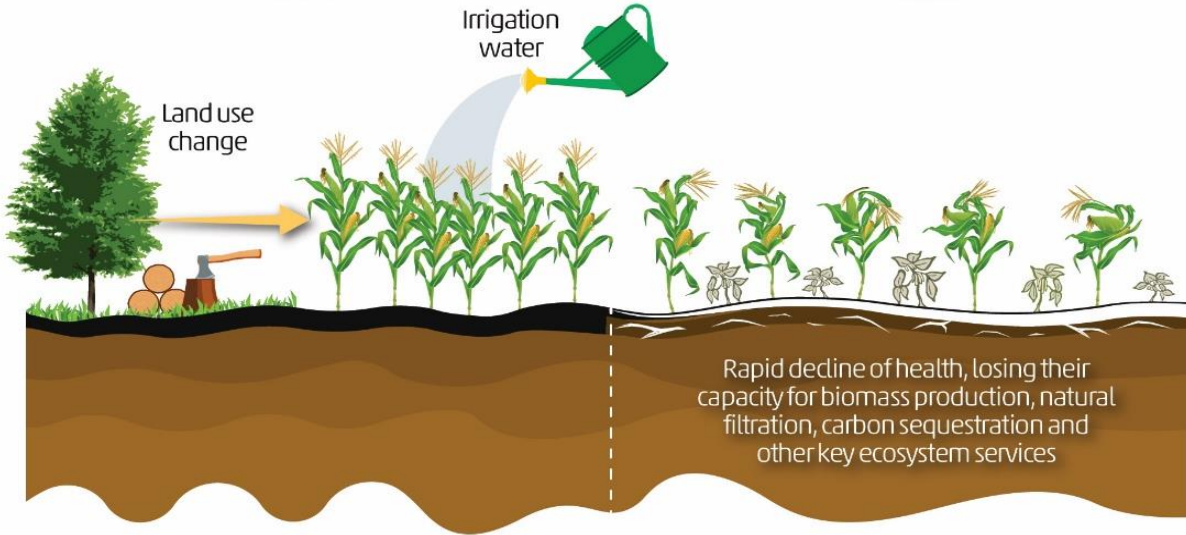
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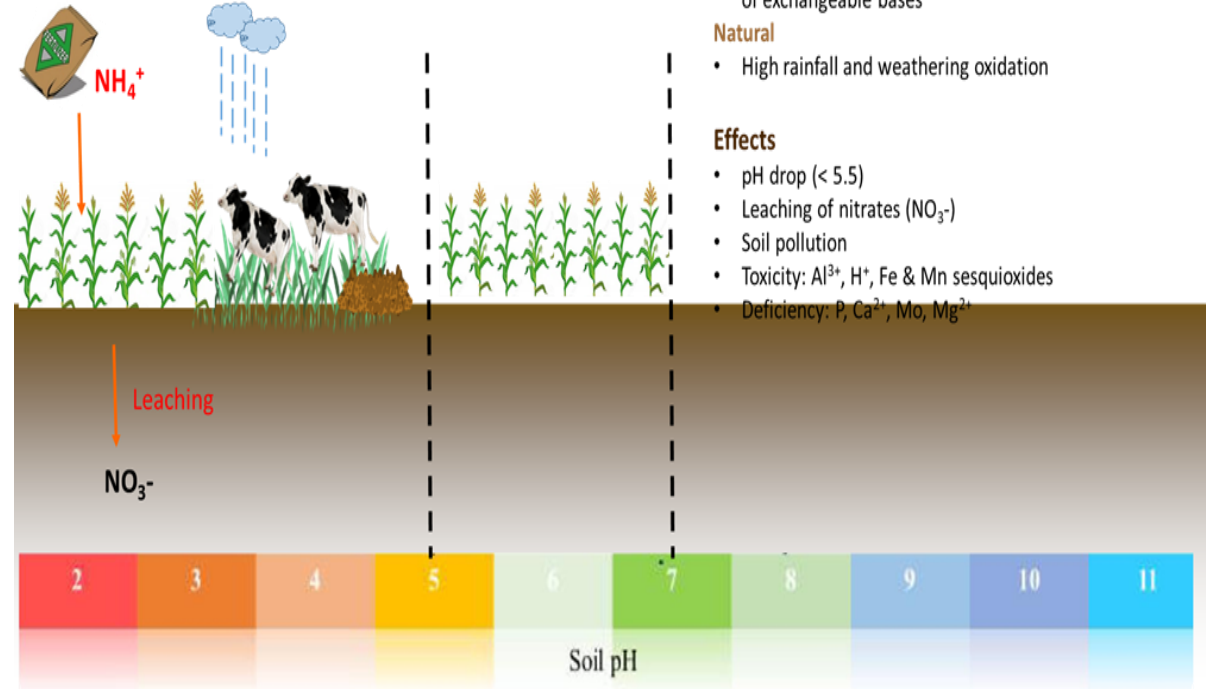
Biodiversity loss

Soils affected by human-induced salinity

Causes



Soil acidification



Causes

Anthropic

- Excessive inputs of nitrogen (as NH_4^+)
- Legume monoculture
- Acid rain
- Removal of all harvested materials and no reposition of exchangeable bases

Natural

- High rainfall and weathering oxidation

Effects

- pH drop (< 5.5)
- Leaching of nitrates (NO_3^-)
- Soil pollution
- Toxicity: Al^{3+} , H^+ , Fe & Mn sesquioxides
- Deficiency: P, Ca^{2+} , Mo, Mg^{2+}

Best available practices – adapted to regional and landscape features of Black soils – → The INBS Knowledge Base of the BAP for Black soils

Tillage Management



Photo: Indian Head of Canada, William May

Nutrient Management



Photo: Jinlin province, China, Guozhong Feng

Organic Cover



Photo: Salto, Argentina, Guillermo Pe

Water Conservation



Photo: Lishu county, China, Ye Sha

Biomass Management



Photo: Zhaoguan county, China, Xingzhu Ma

Crop Diversification



Photo: Russia, T.A_Zubkova

Integrated Systems



Photo: Brazil, Ricardo Bergamo Schenato

Recommendations

Global Status of Black Soils report



Farmers

- Maintain or even increase SOC stocks and reduce GHG emissions through **proven SSM practices – for sustainable profitable usage of the Best available farming land-use systems with Black soils.**



Academia

- Support the **development of good practices** for the sustainable management of Black soils;
- Contribute to the **refinement of the Black soil definition and of their development potential;**
- Establish and active running the Black soil multiscale (from local to global) **monitoring system.**



Government

- Foster the adoption of proven SSM practices through **national financial incentives;**
- Promote **the RECSOIL (Recarbonization of Global Soils)** initiative in Black soil countries;
- Establish **national and regional programmes** for SSM of Black soils with Best available practices.



INBS

- Strengthen **awareness raising** campaigns on the importance of Black soils for food security;
- Refine the current **definition of "black soils" and system-organized info on their current status;**
- Establish an international Black soils **monitoring system with fixation the hot pots of their degradation;**
- Advocate for the establishment of a **global agreement** on the sustainability of global Black soils.
- Strengthen **technical cooperation** among countries with Black soils and developing the **INBS Knowledge Base of the Best Available Practices for Black soils.**

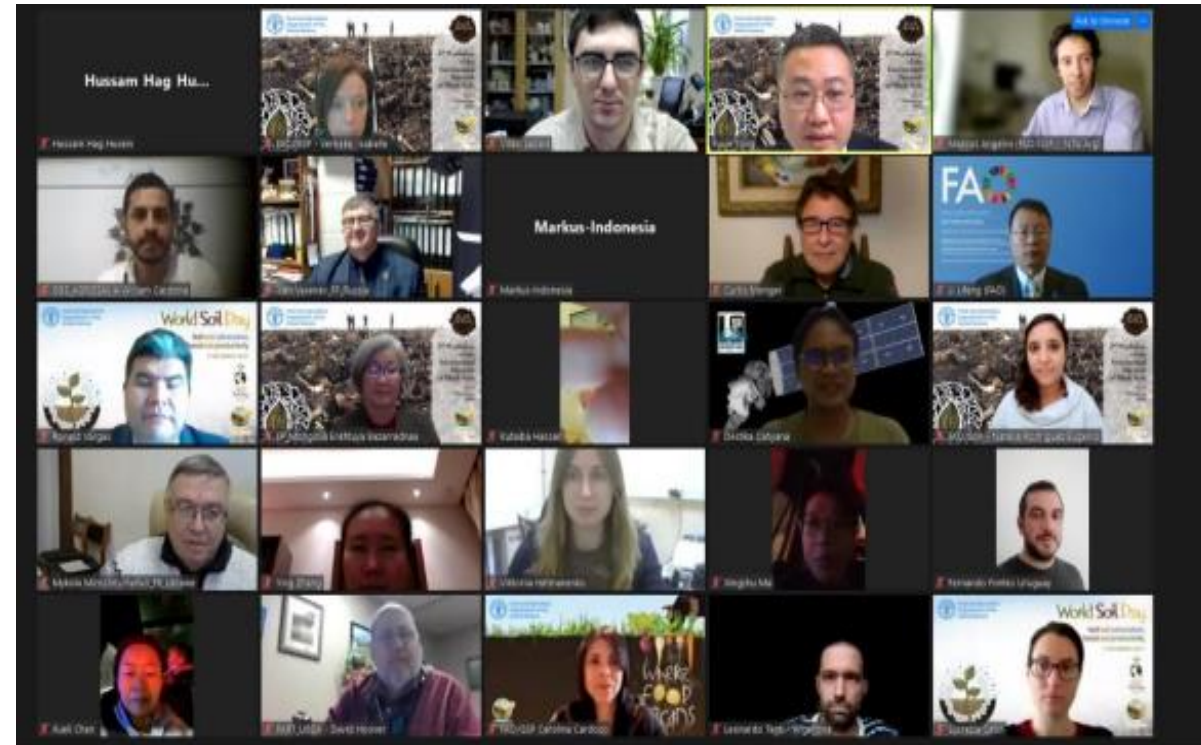
International Research Institution of Black Soils

Establish the **International Research Institution of Black Soils (IRIBS)**

13 December 2021

Mandate - the Institution would be established by a partner (Heilongjiang Academy of Agricultural Sciences) under the framework of the INBS.

Launch Conference of the IRIBS – 10-th June 2022.



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Protection of the Black Soils is our Best Investment in Good Future of our Children



Better production



Better nutrition



Better environment



Better life





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