



Food and Agriculture
Organization of the
United Nations

INTERNATIONAL SYMPOSIUM ON

Black Soils

Protect black soils
Invest in the future



Hosted: by FAO's Global Soil Partnership.

Sponsored: - by Heilongjiang Academy of Agricultural Sciences,
- the Soil Science Society of China,
- Soil Fertilizer Society of Heilongjiang Province

H A R B I N , C H I N A

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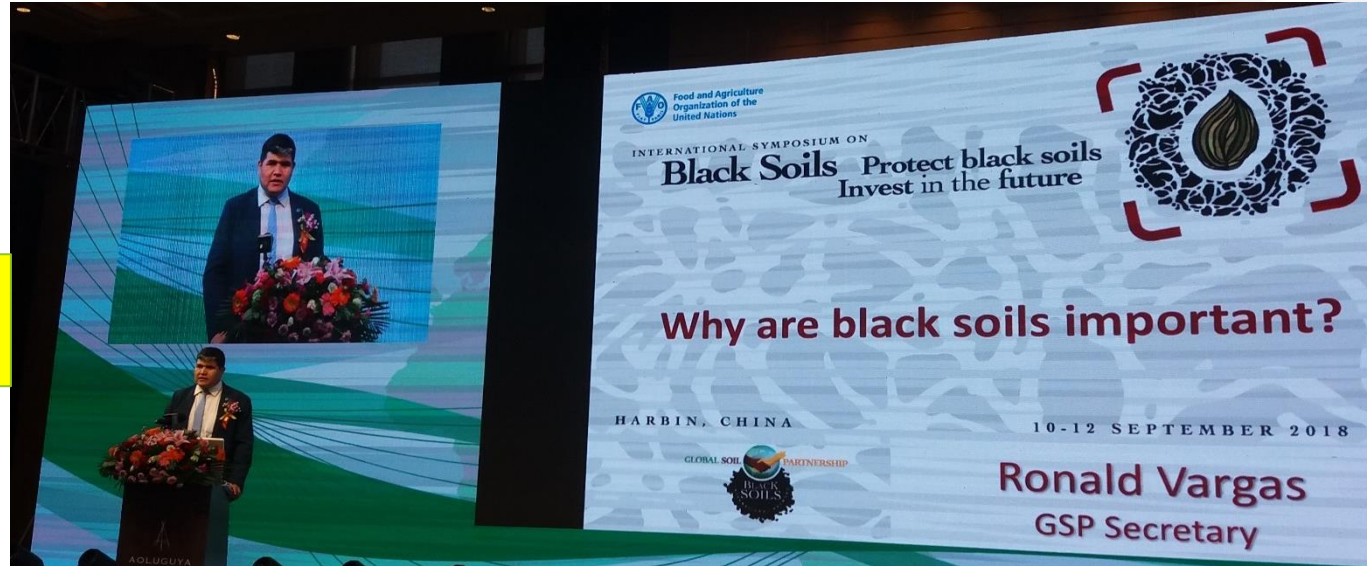
Heilongjiang Academy
of Agricultural Sciences



Heilongjiang
Provincial Government

Головні організатори симпозіуму

Рональд Варгас,
Секретар ГГП



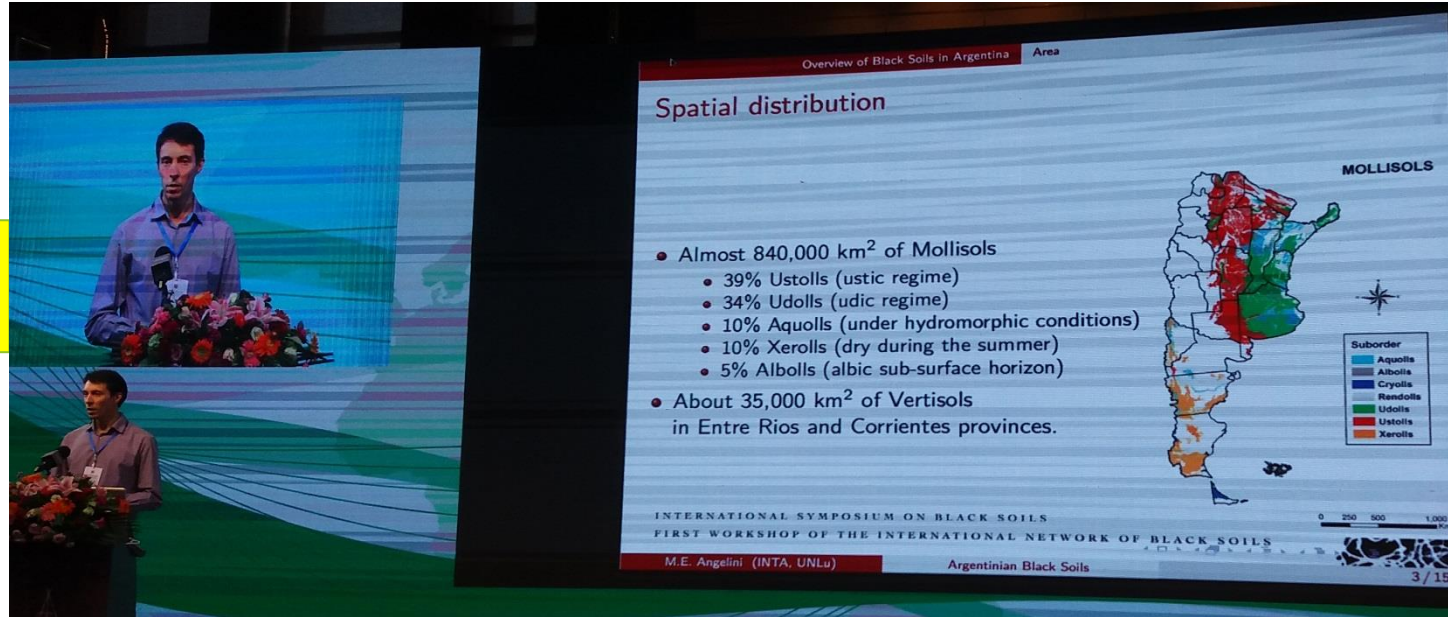
Guiqing Han,
Президент INBS

Міжнародна мережа чорноземних ґрунтів (INBS) була започаткована на Глобальному симпозіумі з органічного вуглецю у березні 2017.



Південна Америка: Аргентина, Бразилія, Уругвай

Аргентина (Mollisols, Vernisols)



Overview of Black Soils in Argentina Area

Spatial distribution

- Almost 840,000 km² of Mollisols
 - 39% Ustolls (ustic regime)
 - 34% Udolls (udic regime)
 - 10% Aquolls (under hydromorphic conditions)
 - 10% Xerolls (dry during the summer)
 - 5% Albolls (albic sub-surface horizon)
- About 35,000 km² of Vertisols in Entre Rios and Corrientes provinces.

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M.E. Angelini (INTA, UNLu) Argentinian Black Soils

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Definition (Classification)

Chernossolos: high base saturation and chernozemic A horizon overlying a textural B or incipient B horizon, or overlying a carbonatic C, calcic or petrocalcic horizon or overlying rock, in case of high calcium carbonate concentration in the A horizon. The A or B with high activity clay, necessary.

Chernozemic A horizon

- **Thickness:** ≥ 10 cm (A + rock), and ≥ 18 or ≥ 25 cm (variation of soil depth).
- **Dark colored:** chroma and values ≤ 3 (moist) and ≤ 5 when dry;
- **High base saturation:** $\geq 65\%$, predominance of Ca and Mg;
- **Organic carbon:** ≥ 6 g kg⁻¹.
- **Calcium carbonate** ≥ 400 g kg⁻¹: if color requirements are different from the usual, the **organic carbon content** ≥ 25 g kg⁻¹ within the 18 cm of the soil surface.



Бразилія: (Chernossolos, Vertissolos)

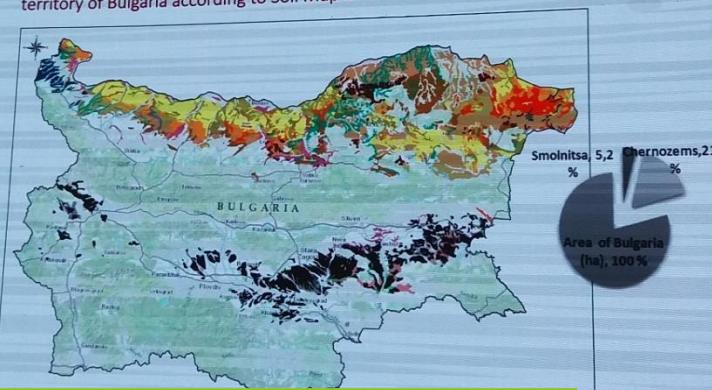
CK SOILS



Східна Європа

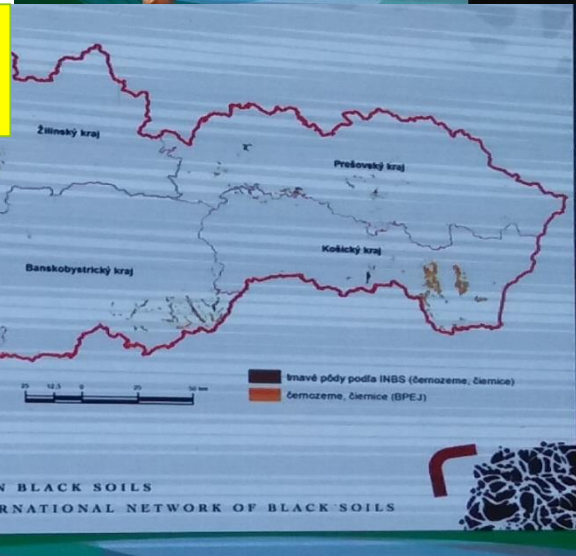


Black Soils distribution (Chernozem and Smolnitsa soil varieties) on the territory of Bulgaria according to Soil Map 1: 400 000

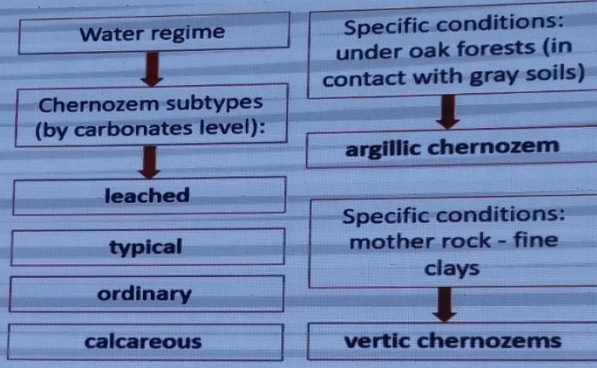


Болгарія: Chernozems, Smolnitsa

Словакія: Chernozems, Chiernica



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Молдова: Chernozem Argillic and Vertic

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Країни тропічного та субтропічного клімату

Індонезія:

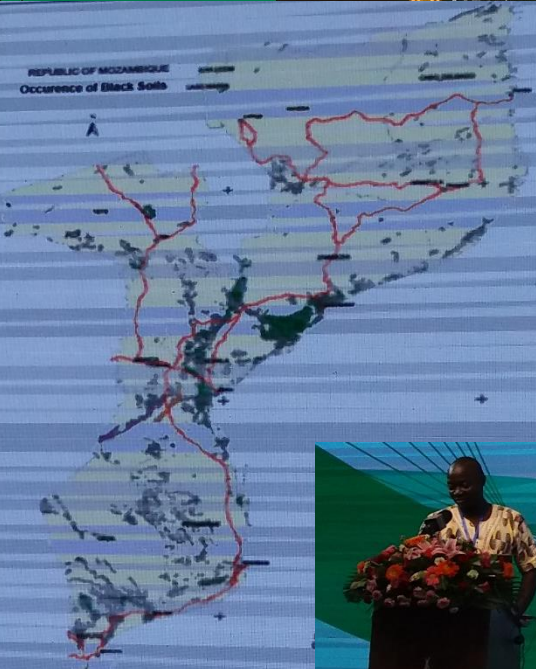
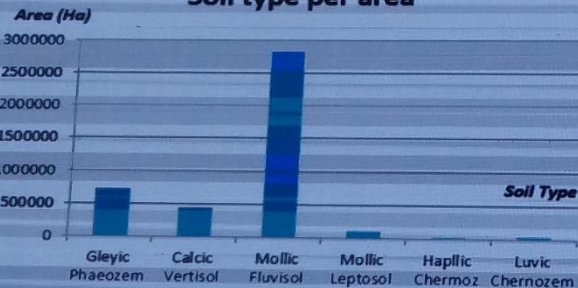
Molisols, Umbrisols,
Rendzina, Grumisols,
Andosols, Gleysols,
Organosols



4. Black soils distribution

Soil Type	Area (Ha)	Total area
Gleyic Phaeozem	719306.2	4170642.54
Calcic Vertisol	445457.2	
Mollic Fluvisol	2834309	
Mollic Leptosol	115153	
Haplic Chernoz	21670.13	
Luvic Chernozem	34746.69	

Soil type per area



Мозамбік: Chernozem
Haplic and Luvic, Vertisol
Calcic, haeozem Gleyic



BLACK SOILS



Росія та Казахстан

Іван Васенев,
обраний віце-
президент INBS

1. Overview of black soils in Russia

- Definition (Classification) : type – subtype – kind – variety...

V.V. Dokuchaev (1883)
“Russian Chernozem”

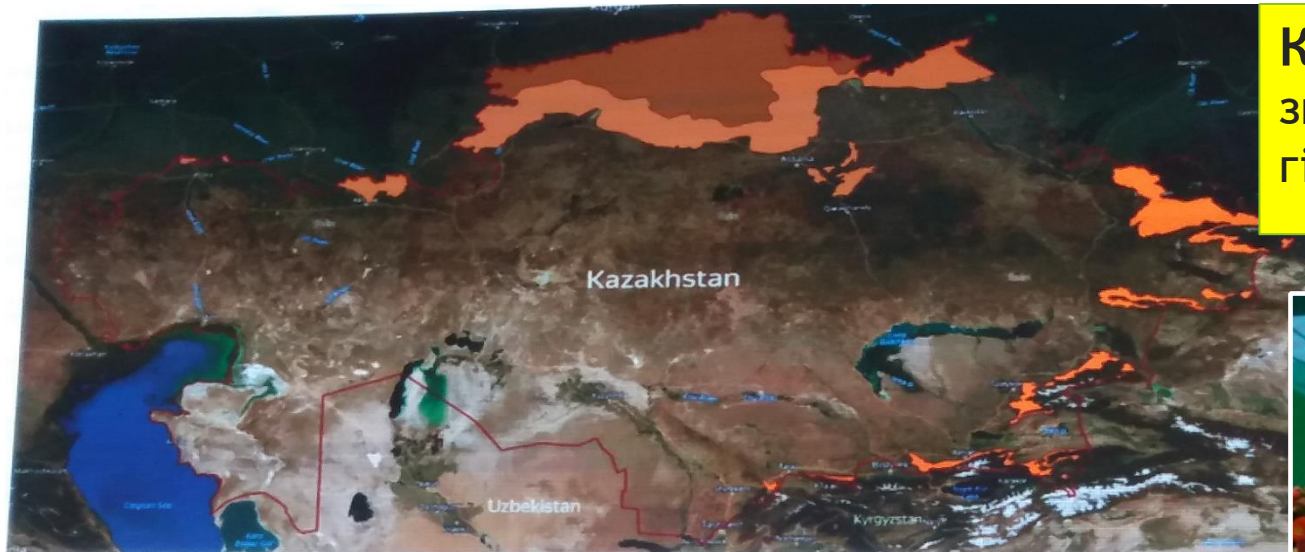
Principal Black soils in RF:

- Grey-Luvic Phaeozems
- Luvic Chernozems
- Voronic Chernozems
- Vermic Chernozems
- Vorony-Calciic Chernozems
- Calciic Chernozems
- Haplic Kastanozems
- Gypsic Kastanozems

...

(“RF Soil National Atlas”, 2011)

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Казахстан: чорноземи
звичайні, південні,
гірські та передгірські

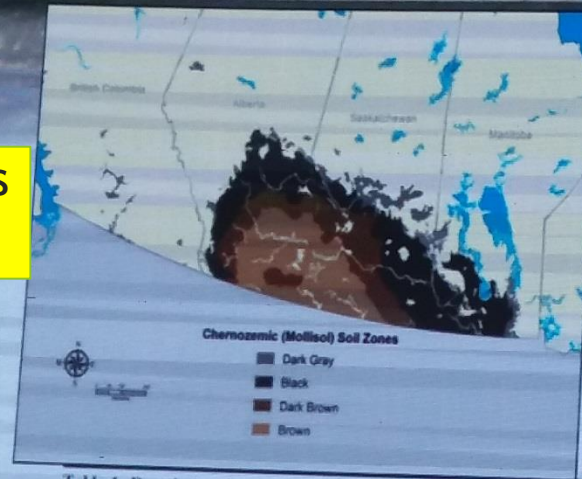


	ordinary chernozems	12550 mln he	Total 30985 mln he
	northern chernozems	12955 mln he	
	mountain and premountain chernozems	5485 mln he	

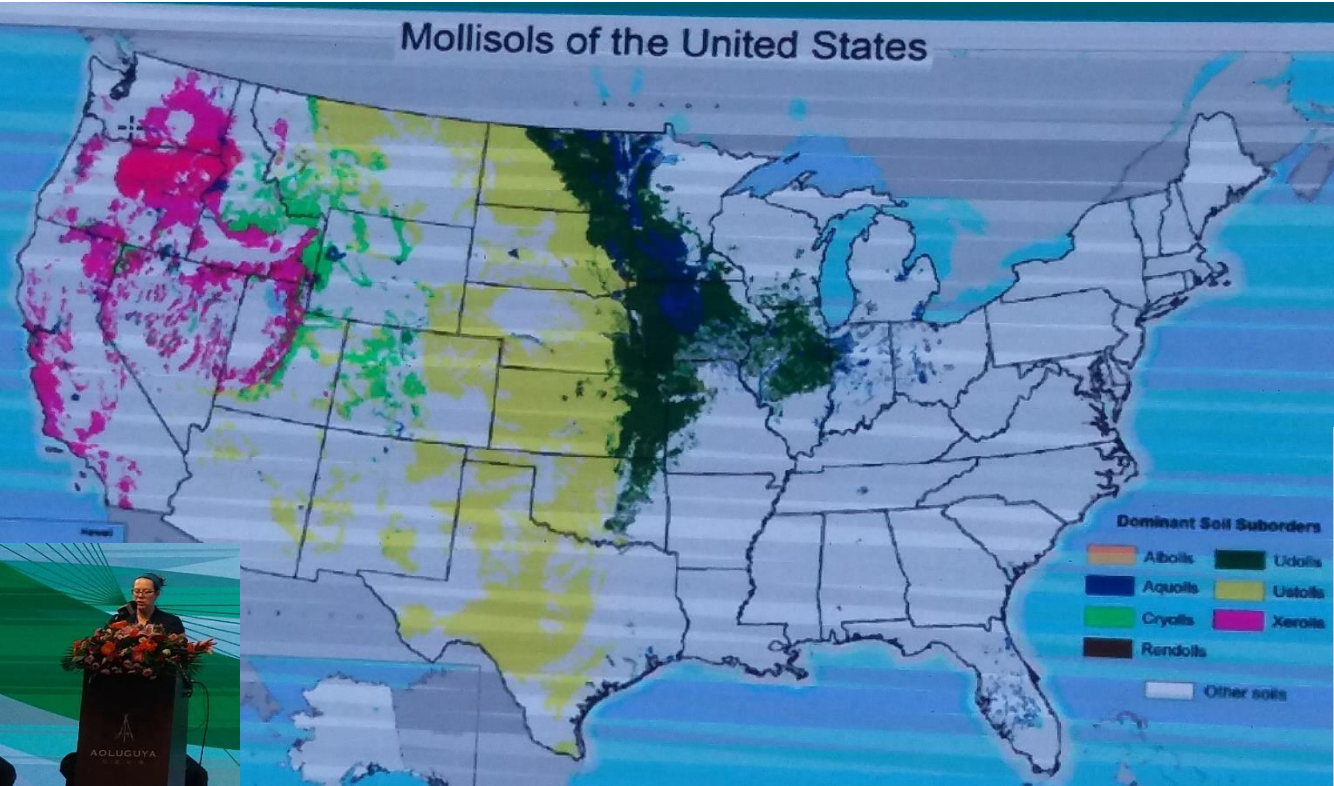
Північна Америка

Канада: Mollisols and Chernozems

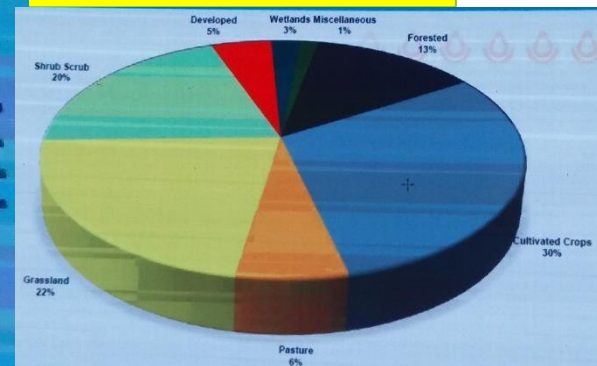
Characteristics of black soils in Canada



Mollisols of the United States



США: розмаїття Mollisols



Головні дискусії:

- дефініція BS;
- кількісні параметри.

How are black soils defined across the world?

Black soils, considered the food basket for many countries and for the world, and are often recognized as inherently productive and fertile soils, are broadly defined under the International Network of Black soils as soils having the following core characteristics:

- High organic carbon content as per the following:
 - >1.5% for cold and temperate
 - >0.6% for tropical and sub tropical regions.
- Dark to black coloured surface horizons
- Thickness of dark to black soil surface horizons not less than 25 cm.

And the following complementary characteristics:

- A high base saturation >50%
- Strong aggregate stability
- High level of nutrient content

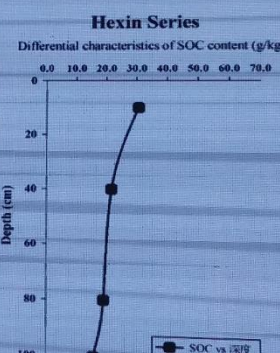
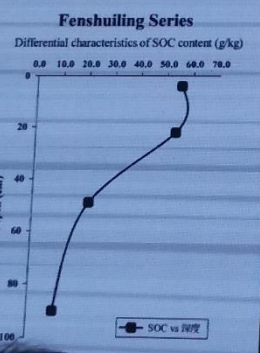


What's the difference between Mollic epipedon and Isohumic property?

均腐土 (Isohumosols) —— 具有暗沃表层(Mollic)和均腐殖质特性 (Isohumic) 的土壤。

分水岭系 暗沃简育湿润锥形土
Mollic Haplic Udic Cambosols

合心岭系 斑纹简育湿润均腐土
Mottlic, Haplic, Udic Isohumisols



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Демонстраційне дослідне поле Хейлунзянської академії аграрних наук

Дрібноділянкові польові досліді



Ділянки супереліти

Сортовипробувальне поле



LS
NETWORK OF BLACK SOILS



Підсумкові документи:

Harbin Declaration on the International Network of Black Soils

Harbin, China, September 12, 2018

Work plan of International Network of Black Soils for 2018-2020

Venue of next meetings:

Oct 2019: Moldova

Sept 2020: Ukraine

