



Food and Agriculture
Organization of the
United Nations

Enhancing soil governance: regional and national examples of soil legislation development

9th of March 2023
13:00 – 15:00 CET
Online Webinar

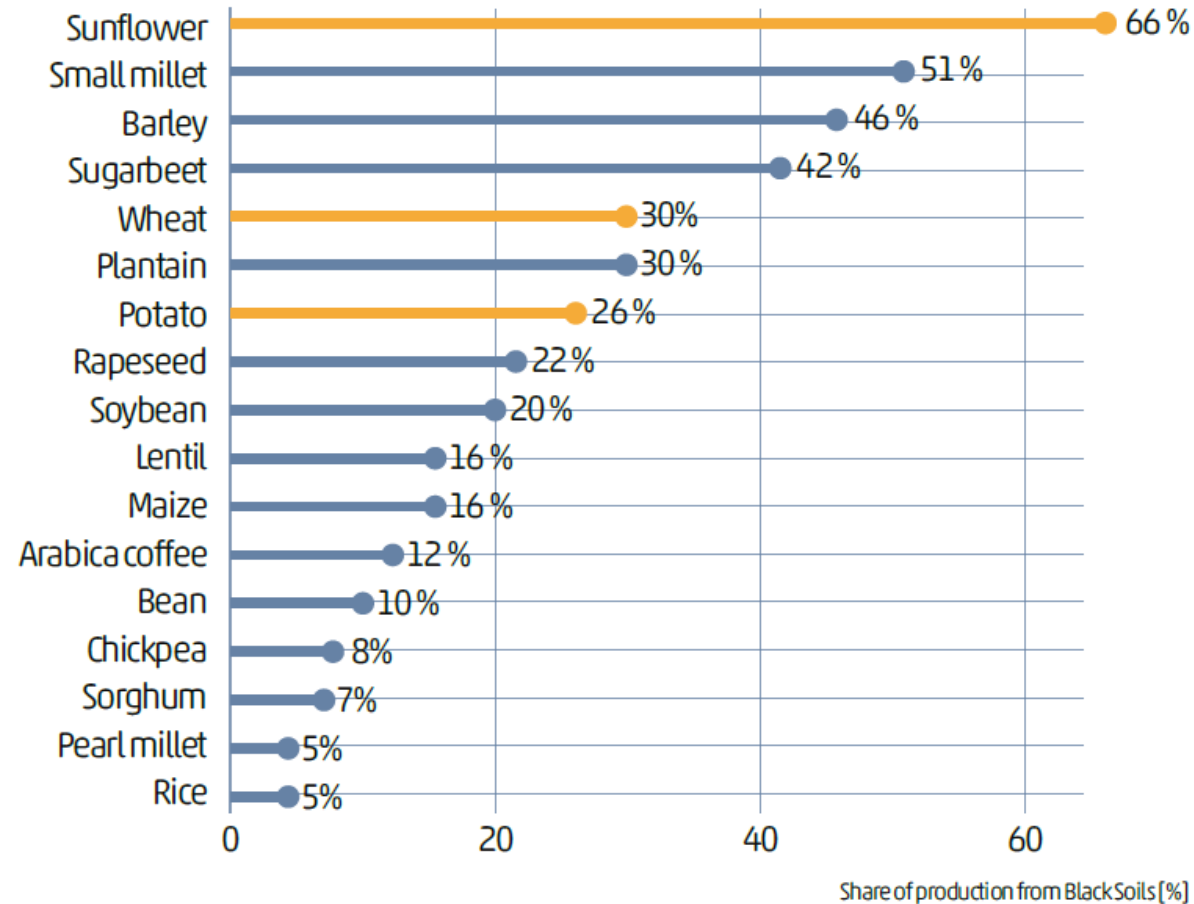
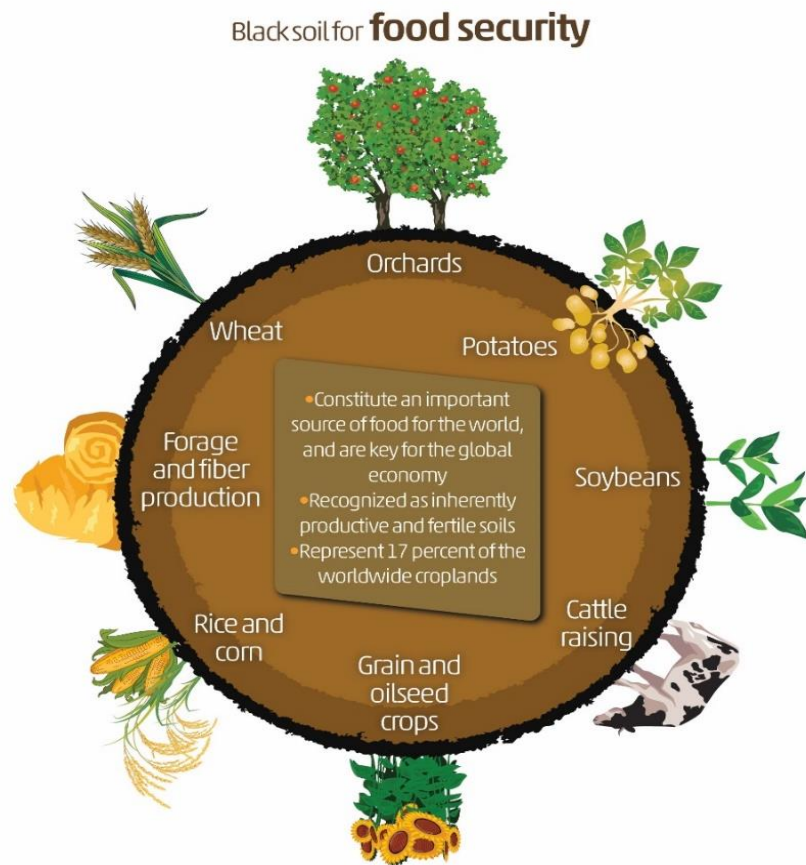
Proposal for a global Agreement on Black soils
protection for global food security

Ivan Vasenev

Umwelt
Bundesamt



The importance of Black soils for Global food and environment security



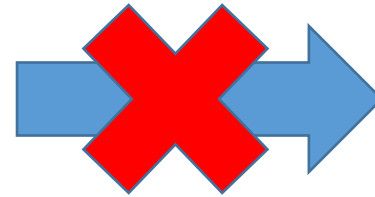
227 million hectares

17% of the Global Cropland Area

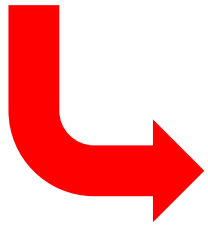
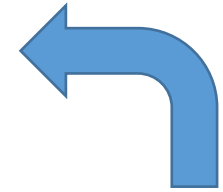
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1. Establishment of legislative restrictions on changing the category of use of agricultural land with Black soils



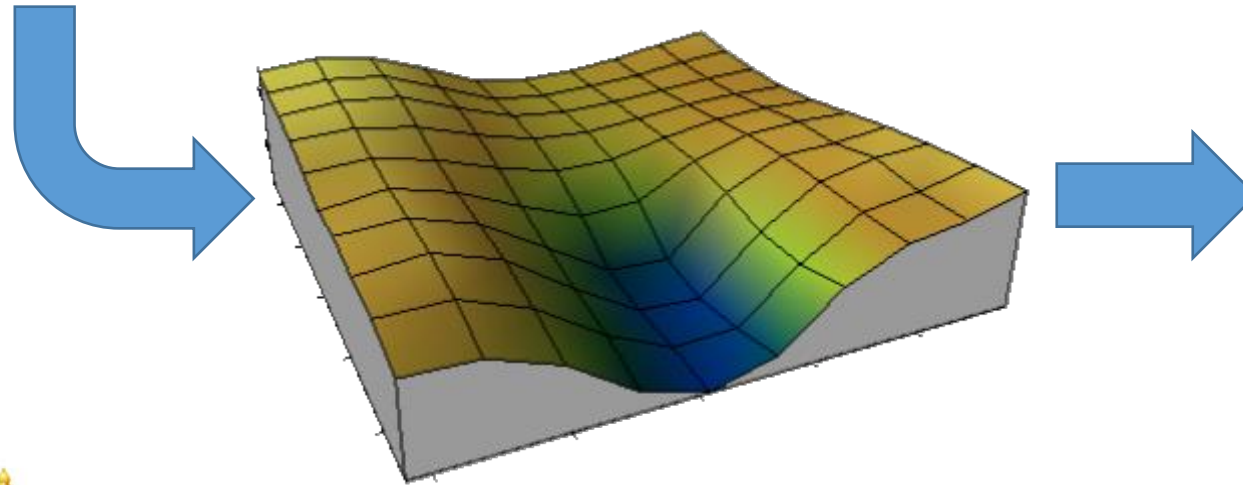
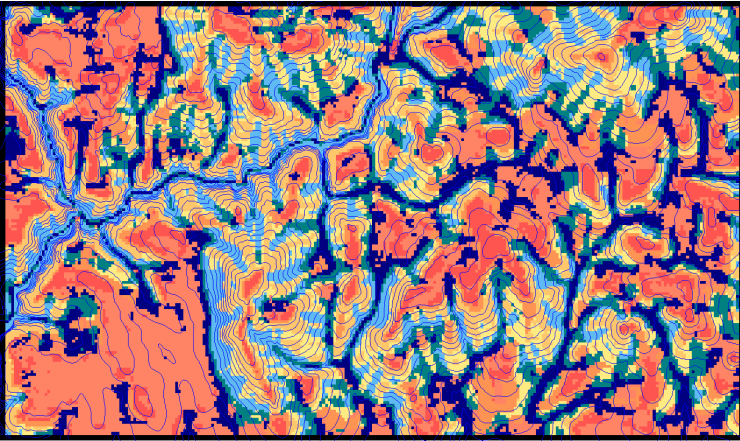
2. Mandatory application of the best available technologies in the agricultural use of Black soils



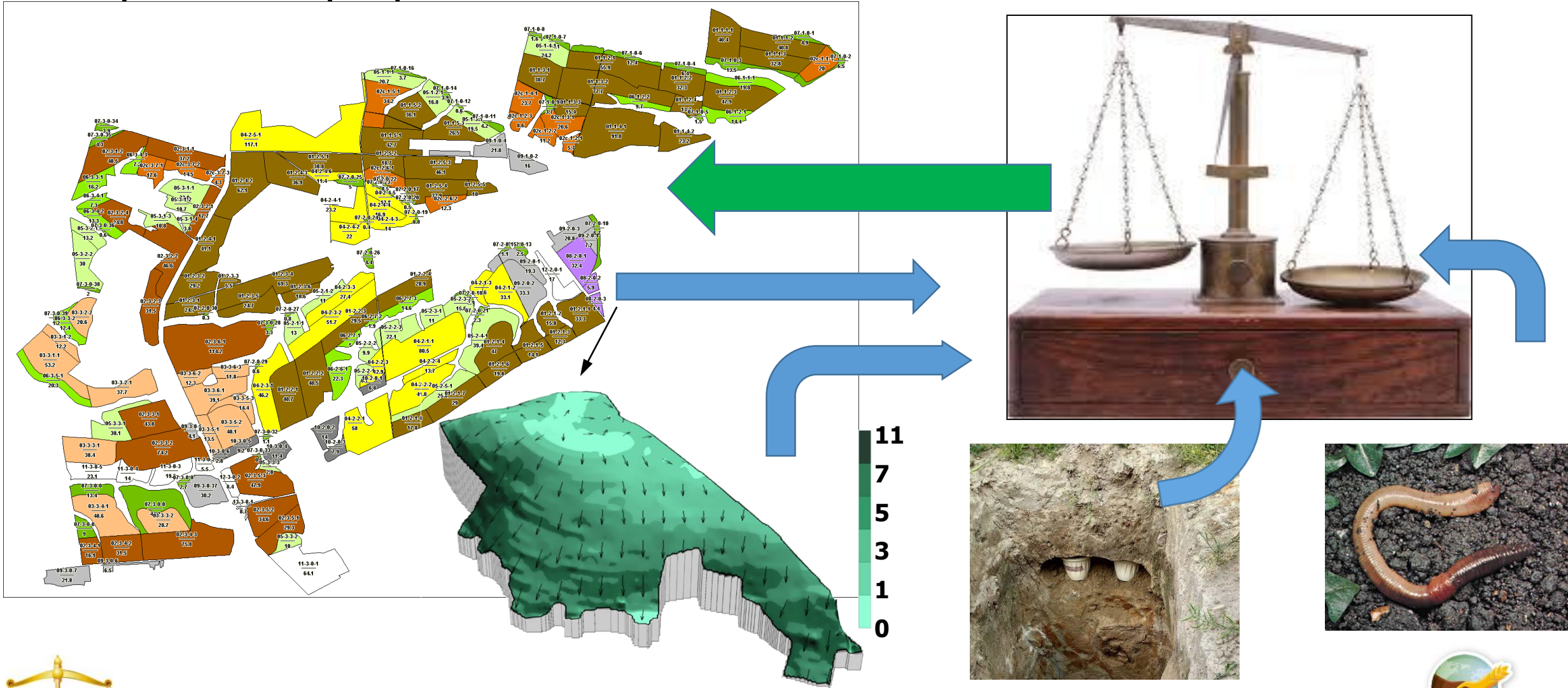
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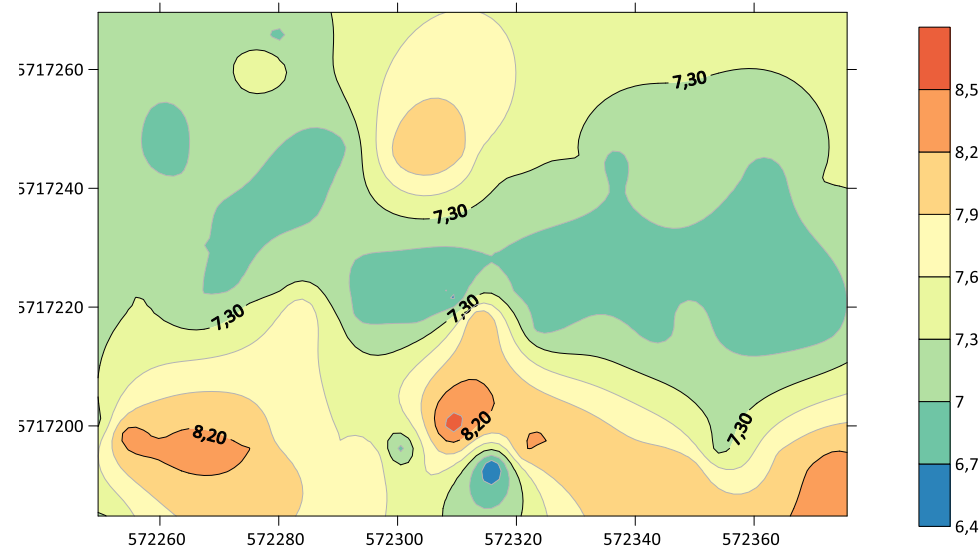
3. Mandatory development and application of adaptive-landscape farming systems in the agricultural use of Black soils



4. The need to obtain a positive conclusion of the state environmental expertise on projects for the land-use of Black soils



5. The need to develop EIA projects for Black soil land-use projects



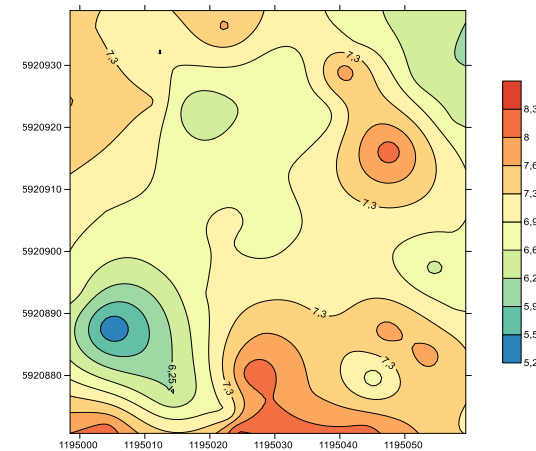
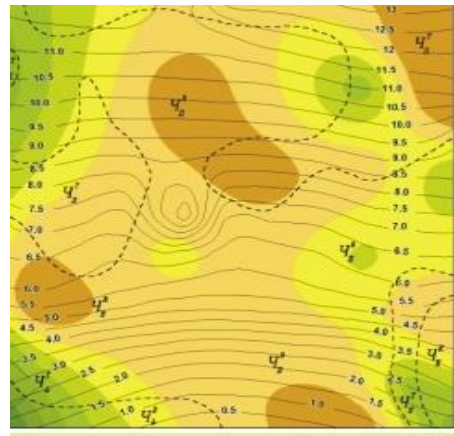
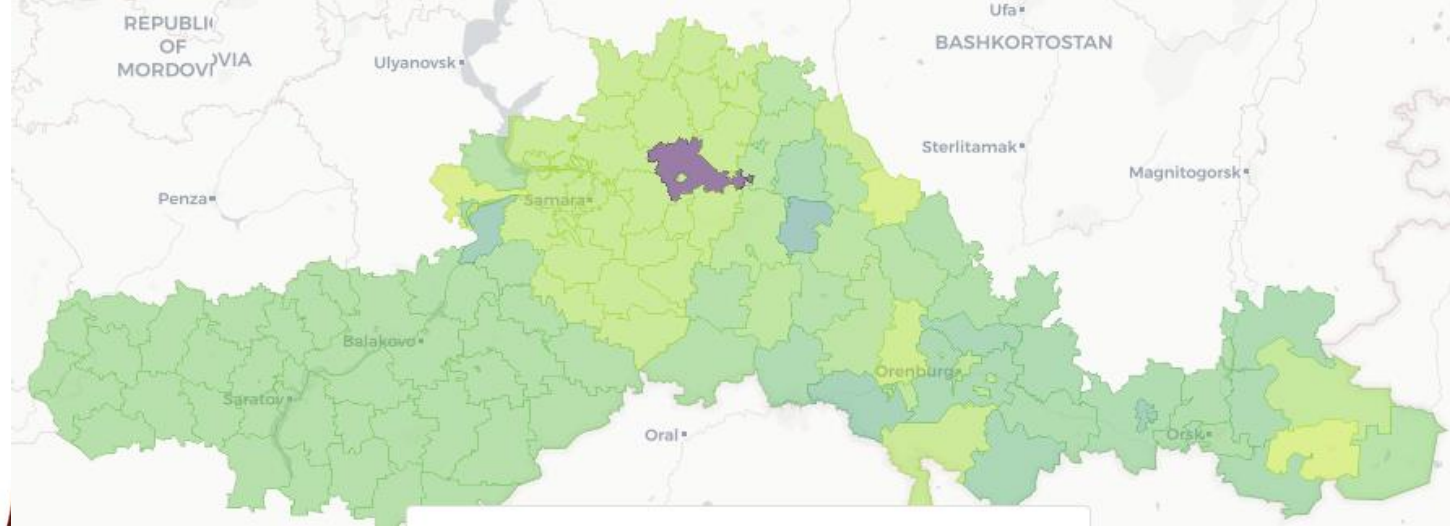
6. The need to develop and maintain open agroecological passports of agricultural land plots with Black soils



| Factor | Parameter type | Diagnostic parameter name | Value | Buffer value |
|--------|--|---------------------------|-------|--------------|
| A. | Land productivity: increased | | | |
| | factor value | | 0.954 | |
| | limiting parameter | pH | 0.853 | 0.751 |
| | most unstable | K exchangeable | 0.918 | 0.604 |
| B. | Trafficability and workability conditions: rather good | | | |
| | factor value | | 0.671 | |
| | limiting parameter | Bulk density | 0.388 | 0.101 |
| | most unstable | Bulk density | 0.388 | 0.101 |
| C. | Soil cover: weak heterogeneous Bulk density | | | |
| | factor value | | 0.944 | |
| | limiting parameter | Basic exchange capacity | 0.114 | 0.052 |
| | most unstable | Bulk density | 0.388 | 0.101 |
| D. | Fertility stability and reclamative state: requiring reclamation improving | | | |
| | factor value | | 0.433 | |
| | limiting parameter | Exchange bases | 0.483 | 0.543 |
| | most unstable | Humus | 0.655 | 0.461 |
| F. | Phyto sanitary state: good | | | |
| | factor value | | 0.864 | |
| | limiting parameter | Weeds | 0.762 | 4.577 |
| | most unstable | Not | — | — |
| H. | Resistance to pollution: very low | | | |
| | factor value | | 0.18 | |
| | limiting parameter | Basic exchange capacity | 0.114 | 0.052 |
| | most unstable | Basic exchange capacity | 0.114 | 0.052 |



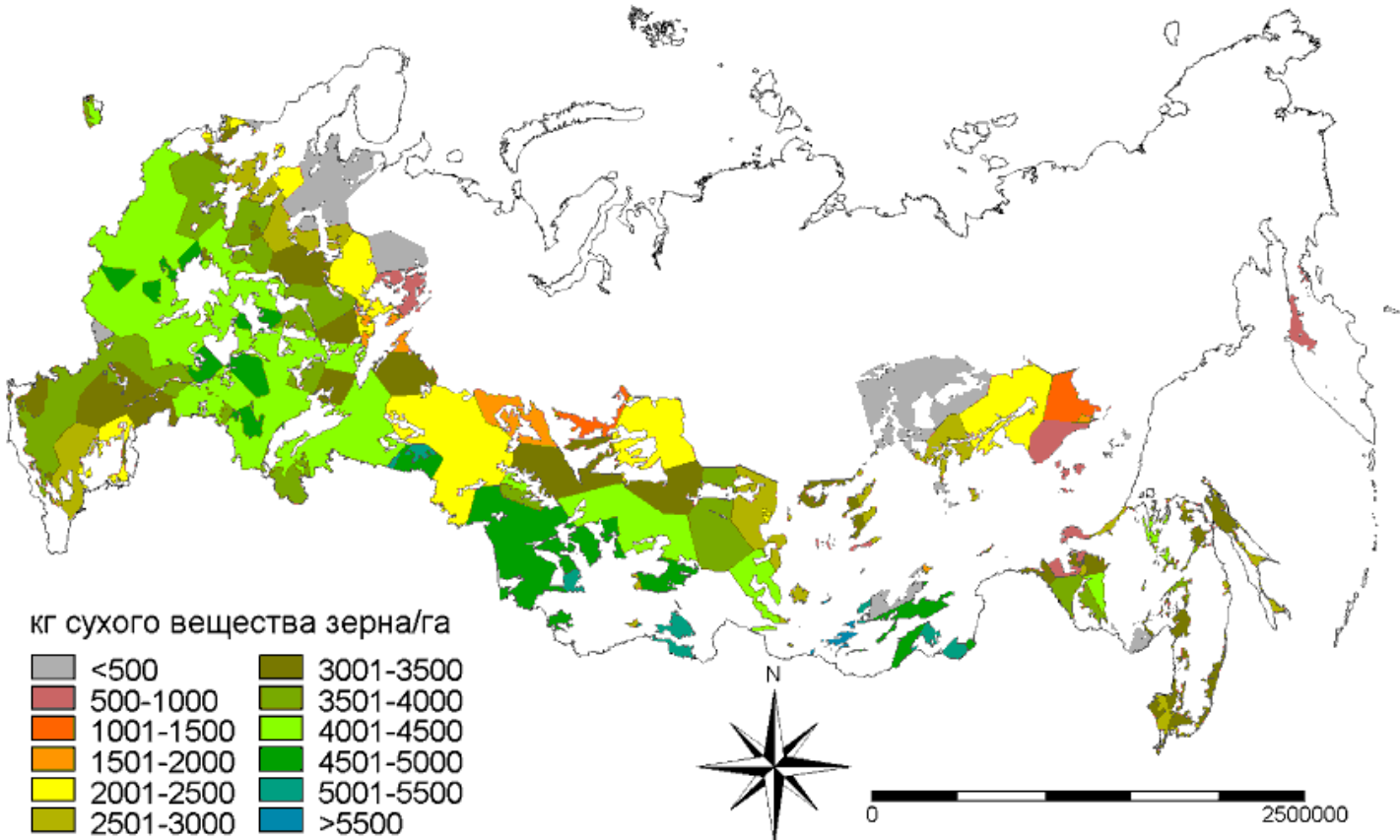
7. The need to develop and maintain an open hierarchically organized (local - regional - national - global) international system of agroecological monitoring of Black soils



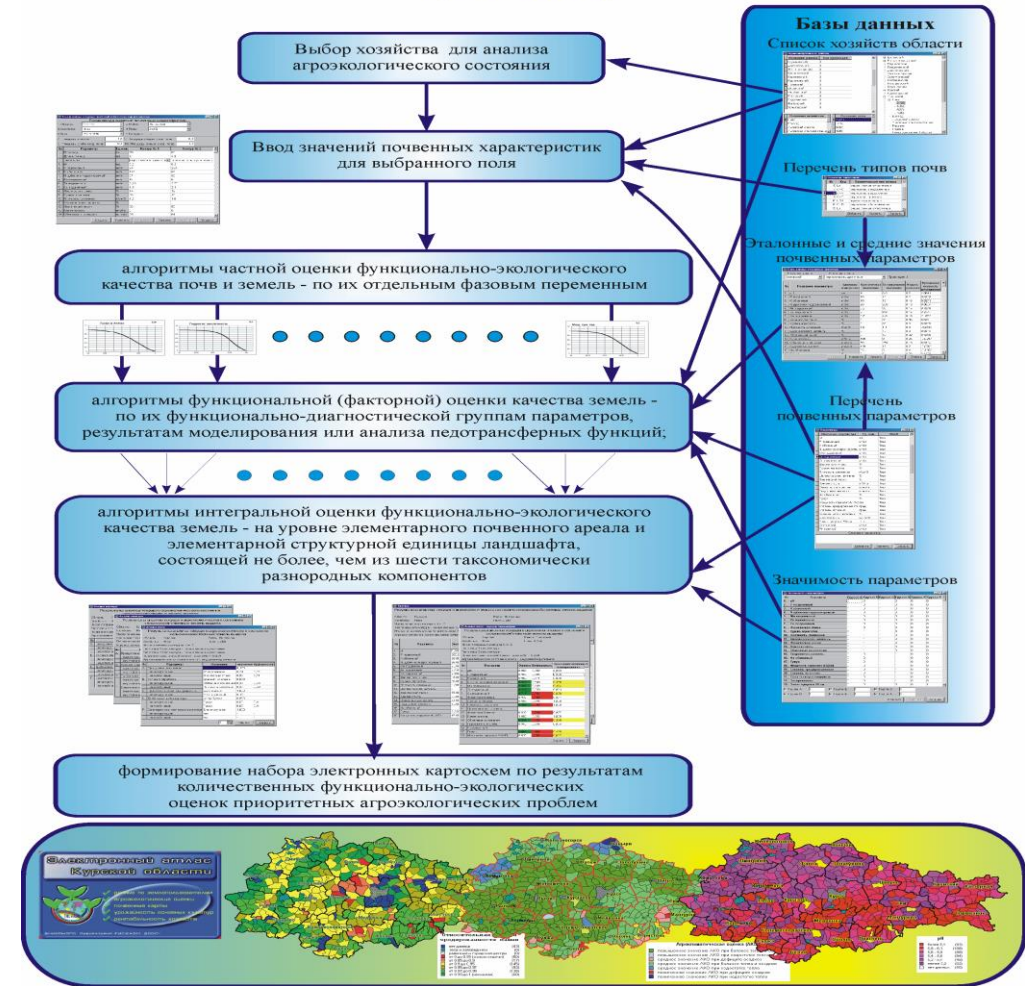
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8. The need to develop and maintain open state systems for controlling the agroecological state of Black soils

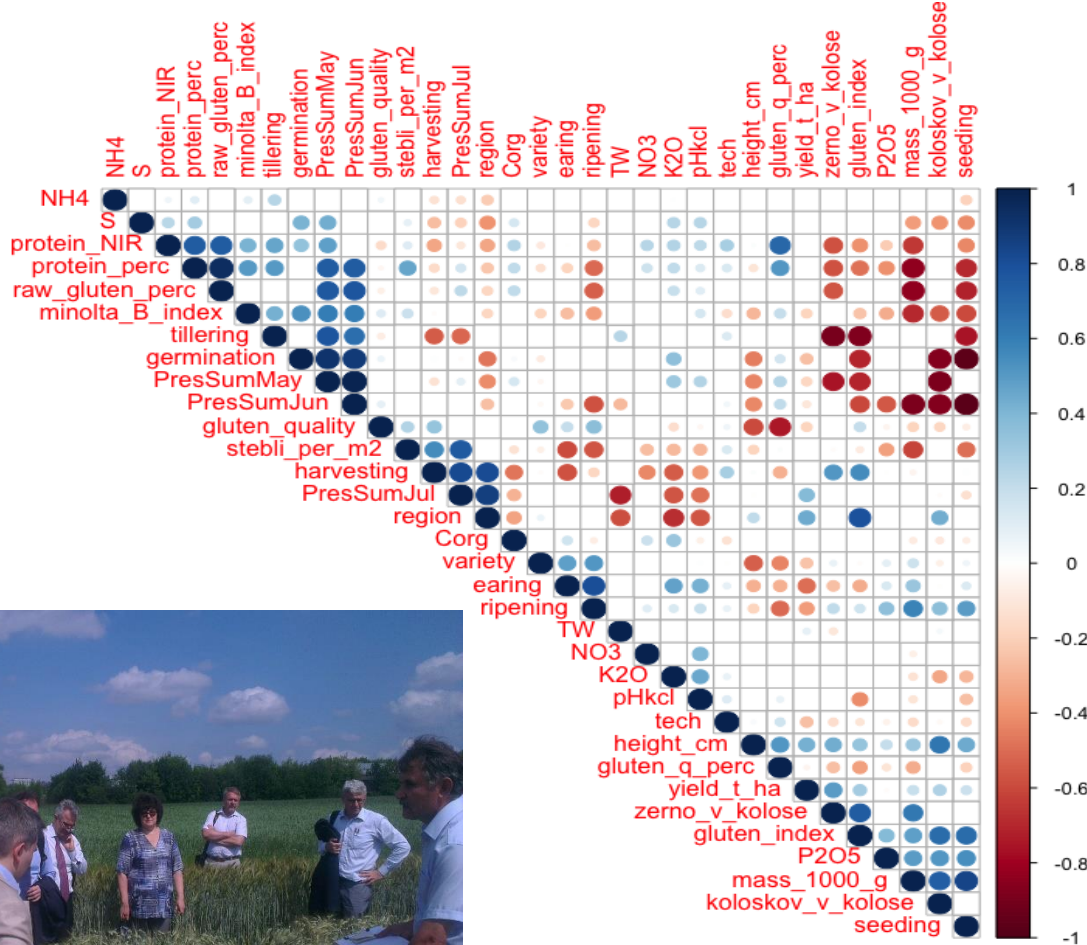
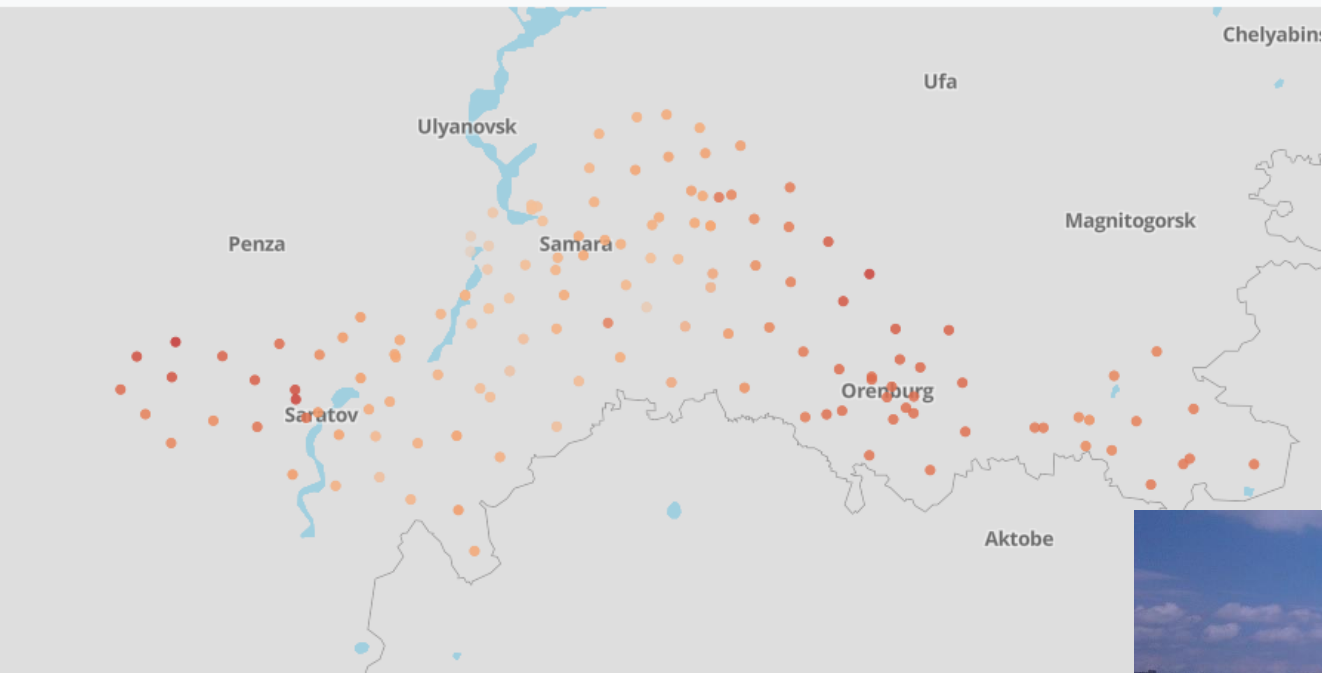


Региональная автоматизированная система комплексной агроэкологической оценки земель (РАСКАЗ)



9. The need to stimulate and support the private activities in agroecological audit of current state of Black soils and their land-use practices

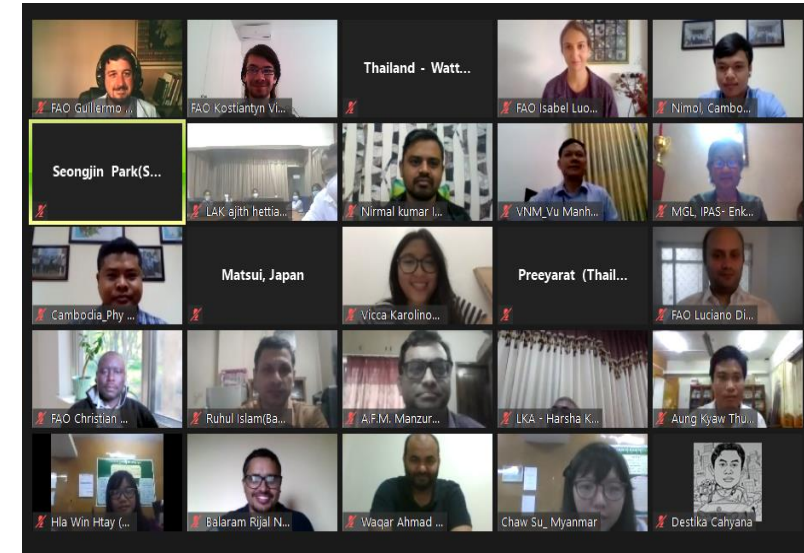
DSS for Durum Project



Choose meteorological station closest to your field



10. The need to develop the state (national and regional) laws for regulation the agroecological state of Black soils and their land-use practices



Better production



Better nutrition



Better environment



Better life

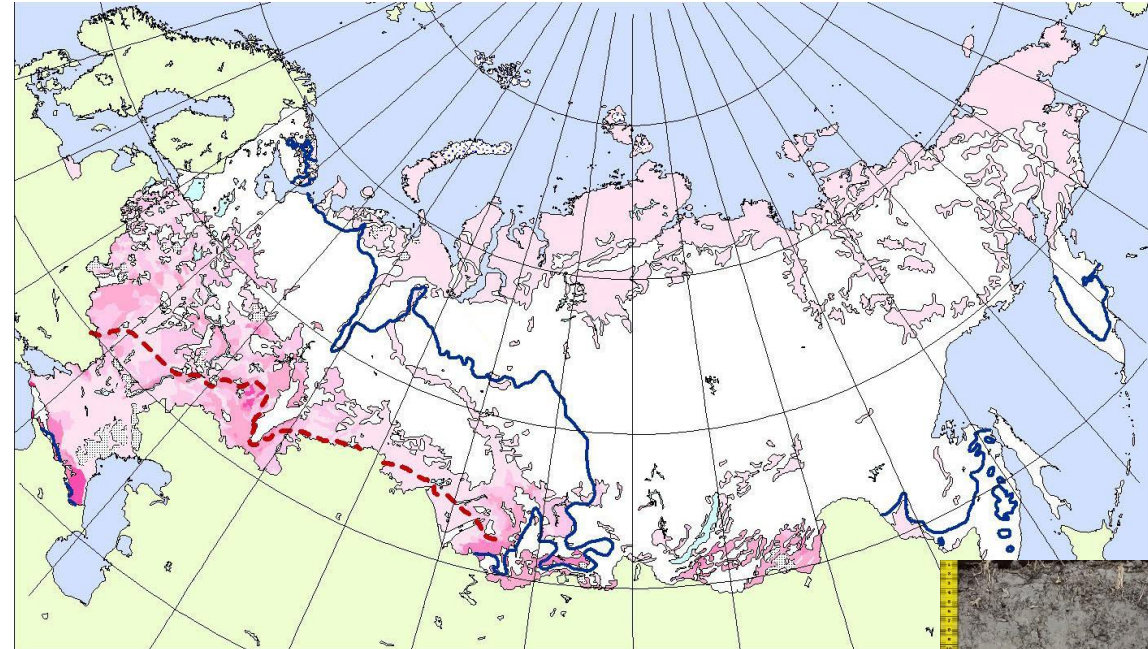
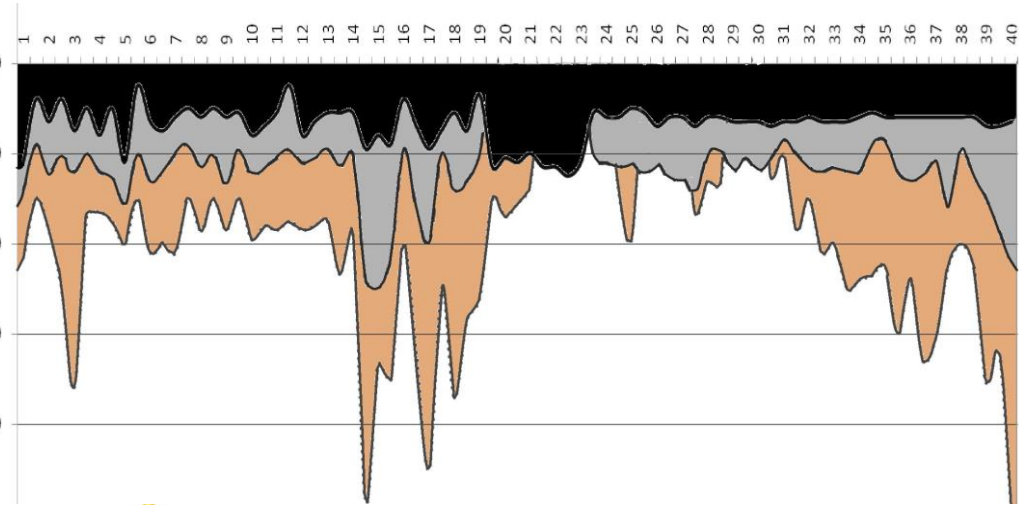


11. The need to develop the international, national and regional systems of normatives of the agroecological state of Black soils and their land-use practices

| Processes | Parameter | Processes Rates in Successions: | | | |
|--------------------|---|---------------------------------|-------------------|----------------------|----------------------|
| | | Agrogenic | Agrogenic-erosion | Agrogenic-irrigation | Agrogenic-ameliorat. |
| Erosion | $A+AB, sm y^{-1}$ | 0,1-0,3 | 0,3-3,0 | 0,3-1,2 | 0,5-1,0 |
| Dehumification | $Humus - g kg^{-1} y^{-1}$ | 0,2-1,0 | 0,3-1,3 | 0,3-0,5 | 0,3-1,0 |
| Humification | $Humus - g kg^{-1} y^{-1}$ | 0,1-0,3 | - | 0,1-0,4 | 0,1-0,5 |
| Overconsolidation | $Bulk density -g sm^{-3} y^{-1}$ | 0,01-0,02 | 0,01-0,05 | 0,01-0,06 | 0,01-0,03 |
| Disaggregation | $\Sigma agregates 10-0,25 mm, g kg^{-1} y^{-1}$ | 1-10 | 1-18 | 10-25 | 8-12 |
| Aggregation | | 1-10 | 1-5 | 1-5 | 1-5 |
| Season cementation | $Crust, sm y^{-1}$ | 0,1-1,0 | | 0,1-2,0 | |
| Leaching | $CaCO_3 - kg sm m^{-2} y^{-1}$ | 0,1-0,3 | 0,3-1 | 1-150 | 1-30 |
| Carbonization | $CaCO_3 - g kg^{-1} y^{-1}$ | | 0,3-1 | 0,3-1,5 | 0,5-3,0 |
| Acidification | $\Delta pH y^{-1}$ | 0,01-0,1 | 0,03-0,1 | 0,05-0,13 | 0,03-0,1 |
| Alkalization | $\Delta pH y^{-1}$ | | 0,01-0,03 | 0,05-0,07 | 0,01-0,03 |
| Na-Salinization | $Na^+ mg kg^{-1} y^{-1}$ | | | 5-18 | |

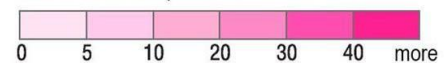


12. The need to develop the international, national and regional Red books of Black soils for their conservation in conditions of different land-use directions



Water erosion – surface runoff

The area of moderately and strongly eroded soils in % of the total area of cultivated and abandoned arable lands and pastures



On sands and on soils with the texture more sandy than loamy sand water erosion is absent or lightly expressed (0-5%)

— Permafrost limit

Wind erosion

Dust storms

--- The northern limit of abundant chernozems

Wind-blown sands

▨ Sands, sandy and loamy sands



13. The need to develop and maintain the open international, national and regional agroecological Knowledge Bases of best available agrotechnologies 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

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