

Koronivia Joint Work on Agriculture workshop
“Improved soil carbon, soil health and soil fertility under grassland
and cropland as well as integrated systems, including water
management”

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Russia’s Experience in the Improving Soil Carbon and Soil Fertility

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The experience of the Russian Federation in improvement of the soil carbon and soil fertility under grassland and cropland, as well as in integrated systems, including water management.

The main state programs for the implementation of measures aimed at adapting to climate change are the following:

1. State Program for Development of Agriculture and Regulation of Agricultural Commodity Markets, Raw Materials and Food Supplies for 2013-2020;
2. Federal Target Program "Development of Land Reclamation for Agricultural Lands of Russia for 2014-2020"

Measures to reduce risks and damage in agricultural production include:

- Cultivation of high-yielding, adapted to unfavorable weather and climatic factors special areal crop varieties;
- Compliance with agrotechnical terms of agricultural work and cultivation technologies;
- Preservation and restoration of soil fertility of agricultural land, including work related to reducing the impact of droughts, desertification and other natural hazards;
- Irrigation of crops in the regions with high total of positive temperatures during the growing seasons.

In the last 36 years, trends in the yield of winter wheat in Russia have been noted from 1% to 17% as a result of the climate change.

At the same time, a tendency to a decrease in the yield of spring barley, grain and grain legumes, which is estimated at 1% for 10 years, was revealed.





Drought



Desertification



Hurricane wind

Russian agriculture lands annually suffer losses because of the natural disasters



Heavy rains



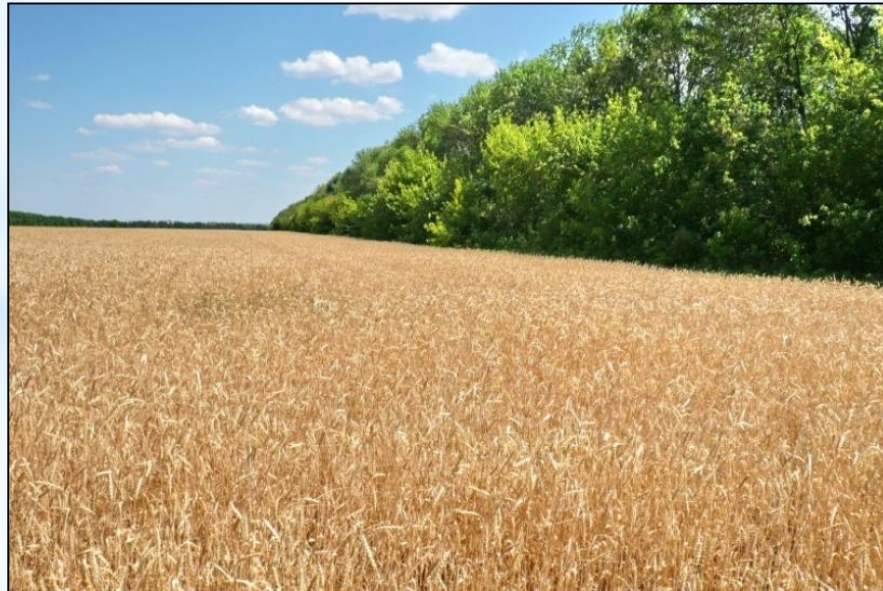
Soil salinization



Erosion

The Experience of the Russian Federation.

1. Forest reclamation. Planting afforestation belts.



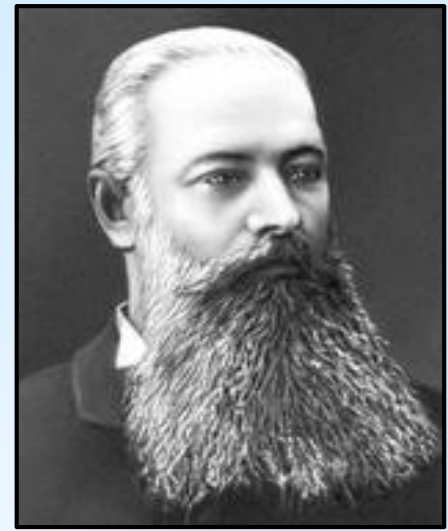
Planting the afforestation belts is not a new method.

Please find below some historical facts.

In 1892, a famous Russian soil scientist Vasily Dokuchaev set up an experiment to protect agriculture lands from storms and drought in the Voronezh region in the steppe zone. Afforestation belts of various broad-leaved trees were planted. This experiment lasts to the present time.

Over the past 100 years there have been significant changes in soil properties:

- ✓ Level of ground water has raised by 2 meters;
- ✓ Soil moisture has increased;
- ✓ Microclimate of the territory has changed from steppe to forest - steppe, more favorable for cropping;
- ✓ The content of organic carbon (humus) in soils has increased.



Russian soil scientist
Vasily Dokuchaev



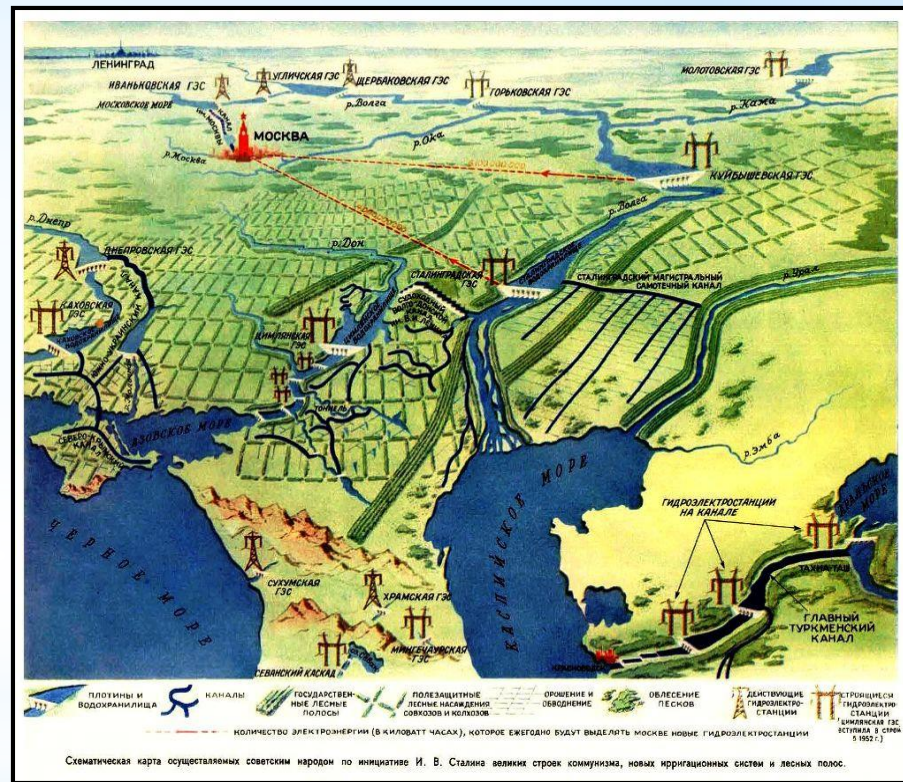
Drought

Stalin's Plan for the Nature Transformation

The aim of this plan was to stop drought, sand and dust storm.

During 1949 - 1965 the following was planned:

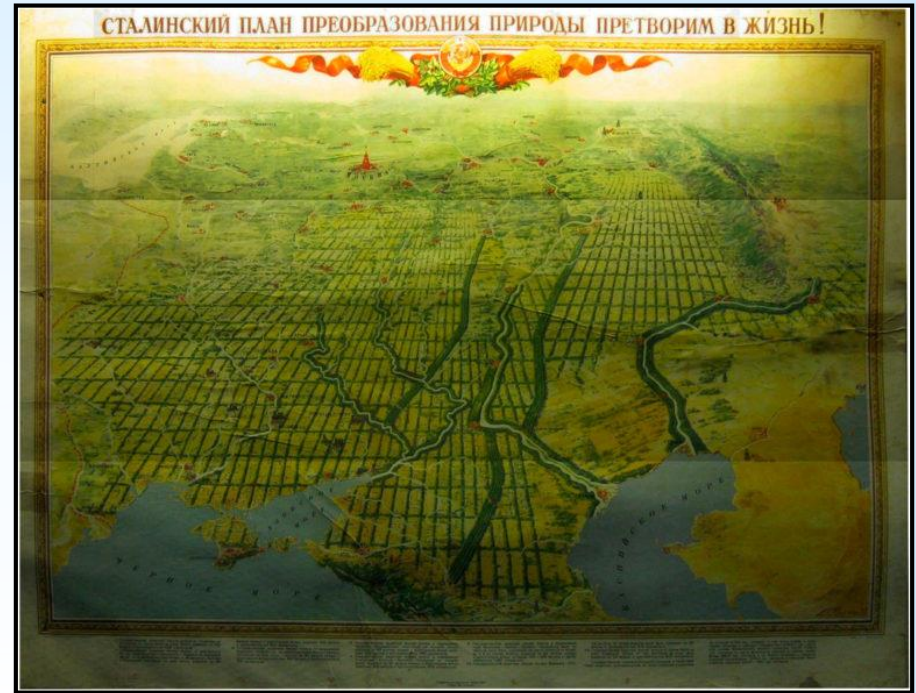
- To create 5709 hectares of protective forest plantations;
- To consolidate and afforest sand at the area of 322,000 hectares (1949 - 1955);
- To create forest protection stations;
- To create 8 state afforestation belts, covering an area approximately 800,000 square kilometers with tens of millions hectares of good arable land;
- To construct ponds and water reservoirs;
- To introduce the grass-growing system of crop rotation;
- To train the relevant personnel.



The Results of the Stalin's Plan:

- ❑ Evaporation decreased by 15%;
- ❑ Moisture saving was up to 60 mm;
- ❑ Accumulation of humus increased;
- ❑ The Chernozem soil layer increased by 2 cm compared to the level in 1892;
- ❑ Destruction of upper layers of the soil by dust storms and winter snow stopped;

In 1953 the plan was finished because of Stalin's death.



Nowadays there are several regions with the largest areas of afforestation belts.



Each region has the local project to protect afforestation belts.

The Voronezh Region.

Project title: “Absorption of Greenhouse Gases by Afforestation Belts on Agriculture Lands”.

The aim of the project: to achieve solution to the problems of the climate change and soil degradation.

The soil cover of the Region is represented by Chernozem soil, which contains a large amount of carbon.

The trees of certain species which are able to absorb maximum CO₂ were planted.

1 hectare of afforestation belts absorb about 4 tons of CO₂ per year. A lot depends on the tree species, geography and climate condition of the region.

About 50 hectare afforestation belts were planted in 2001-2002.

It is planned to plant about 8720 hectare of afforestation belts, of various species, such as Oak, Poplar, Birch, Maple, Ash, Pine, Elm, and others.

Other Regions:

- ✓ The Republic of Buryatia: 500 hectares;
- ✓ The Belgorod Region: 10400 hectares;
- ✓ The Kaliningrad Region - 1500 hectares;
- ✓ The Volgograd Region - 500 hectares.



The Krasnodar Region:

On 5 April 2010 the Law “On Preservation and Reproduction of Protective Forest Plantations on Agricultural Lands” was adopted.

The Volgograd Region:

Federal project “Forest Conservation”: In 2019 it is planned to reproduce forest belts in 26 districts. About 1250 hectare of forest, including forest belts, shall be planted.

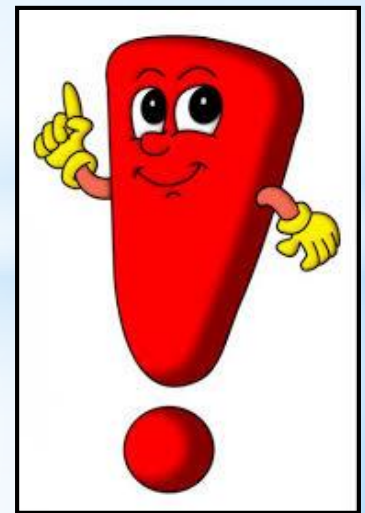


How Do Afforestation Belts Help?

- ✓ Stop drought
- ✓ Stop water and wind erosions
- ✓ Increase yields and hence the value of agriculture soil also increases
- ✓ Save the diversity of flora and fauna
- ✓ Improve the sustainability of the agricultural landscape
- ✓ Reduce the greenhouse effect

The evaporation loss of moisture was reduced by 19,7% due to the afforestation belts.

Useful moisture consumption at the areas with afforestation belts was 64,9%, in the open steppe - 55,3%.



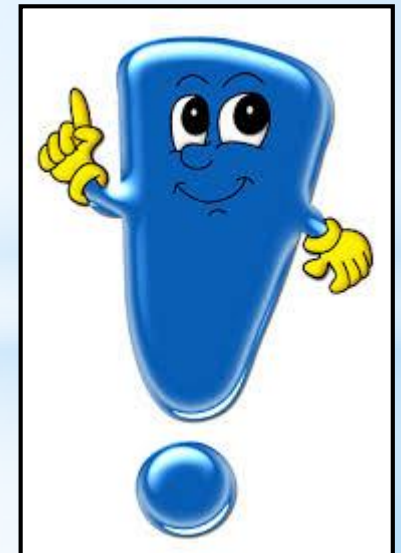
Soil Salinization

Russia has more than 40,000,000 hectare of saline soil, which are prevalent in the southeast of the its European part.



We can not stop the process of salinization. However, we are able to reduce salinization of agriculture soil with the following methods:

- Usage of irrigation techniques without feeding by the groundwater;
- Placement of paddy fields in low lands;
- Preventing flood of irrigated lands with flood waters;
- Installation of protective dams, drains, and catchwaters.



Drought

According to the state programs of agriculture lands adaptation to the climate change, the following measures are taken in Russia:

- ❖ **Growing more drought-resistant and early-ripening wheat species.**
- ✓ In the Volga Region soft spring wheat species were created: the yield is 50 centner/ha; in drought conditions, it is no less than 15 centner/ha;

Complex implementation of agrotechnical measures.

- ✓ Snow retention is an artificial retention of snow in the fields to preserve moisture and to protect plants from freezing.



How can the Koronivia Joint Work on Agriculture and UNFCCC constituted bodies help to address challenges?

The Russian Federation is currently preparing to the ratification of the Paris Agreement. Number of strategical state documents are under development:

- National Adaptation Plan (by July 2019)
- Long-term low GHG emission development strategies (by December 2019)
- National mitigation goal (by December 2019)

Koronivia Joint Work on Agriculture presents an opportunity for the Russian Federation to update national adaptation and mitigation measures and goals in agriculture as well as to determine mitigation potential of the agriculture sector while ensure food security in Russia.



Thank you for your attention!