



INFLUENCE OF BIOLOGICAL PREPARATIONS ON MELIORATION OF SALINE SOILS: CASE STUDY FROM UZBEKISTAN

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Soil salinity is widespread on ca. 50% of irrigated land in the Republic of Uzbekistan and generates a negative impact for productive agriculture. Therefore, this research aims to identify measures for combating soil salinity and maintaining the fertility of saline soils in Uzbekistan when using the biologics "SERHOSIL", "RIZOKOM 1", "BIOSOLVENT" and others. The current research refers to and follows up on research studies carried out in the Khorezm region by the Center for Development Research (ZEF) on salt processes and irrigation techniques under salinity conditions. Furthermore, this work is the result of the German-Uzbek scientific-technological cooperation funded by the BMBF.

RIZOKOM 1



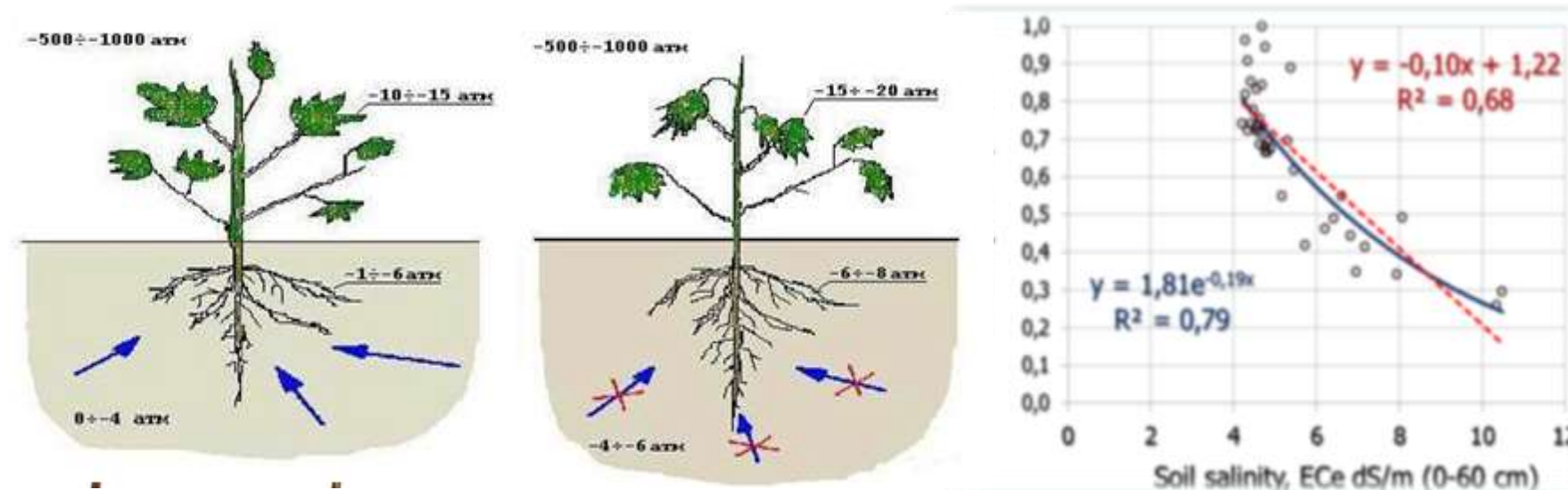
Soil-improvement effects of "RIZOKOM 1" based on bacteria:

- Strengthens p-fixation process by plants
- Reduces the pH of saline soil
- Stimulates root development of cotton due to soil salt absorption by microalgae

How to apply: soaking cotton seeds before planting

Factors of cotton yield decreasing (damages from soil salinity) are:

- under low salinity of 0.85 (15% loss)
- under middle salinity of 0.6 (40% loss)
- under high salinity of 0.4 (60% loss)
- under extremely strong salinity of 0.3 (70% loss)



BIOSOLVENT

The locally produced (Uzbekistan) chemical "BIOSOLVENT" is a polymer compound based on an ionic polymer with an adhesion agent.

- Transforms insoluble salts of polyvalent ions Ca^{+2} and Mg^{+2} into soluble form
- Improves soil structure

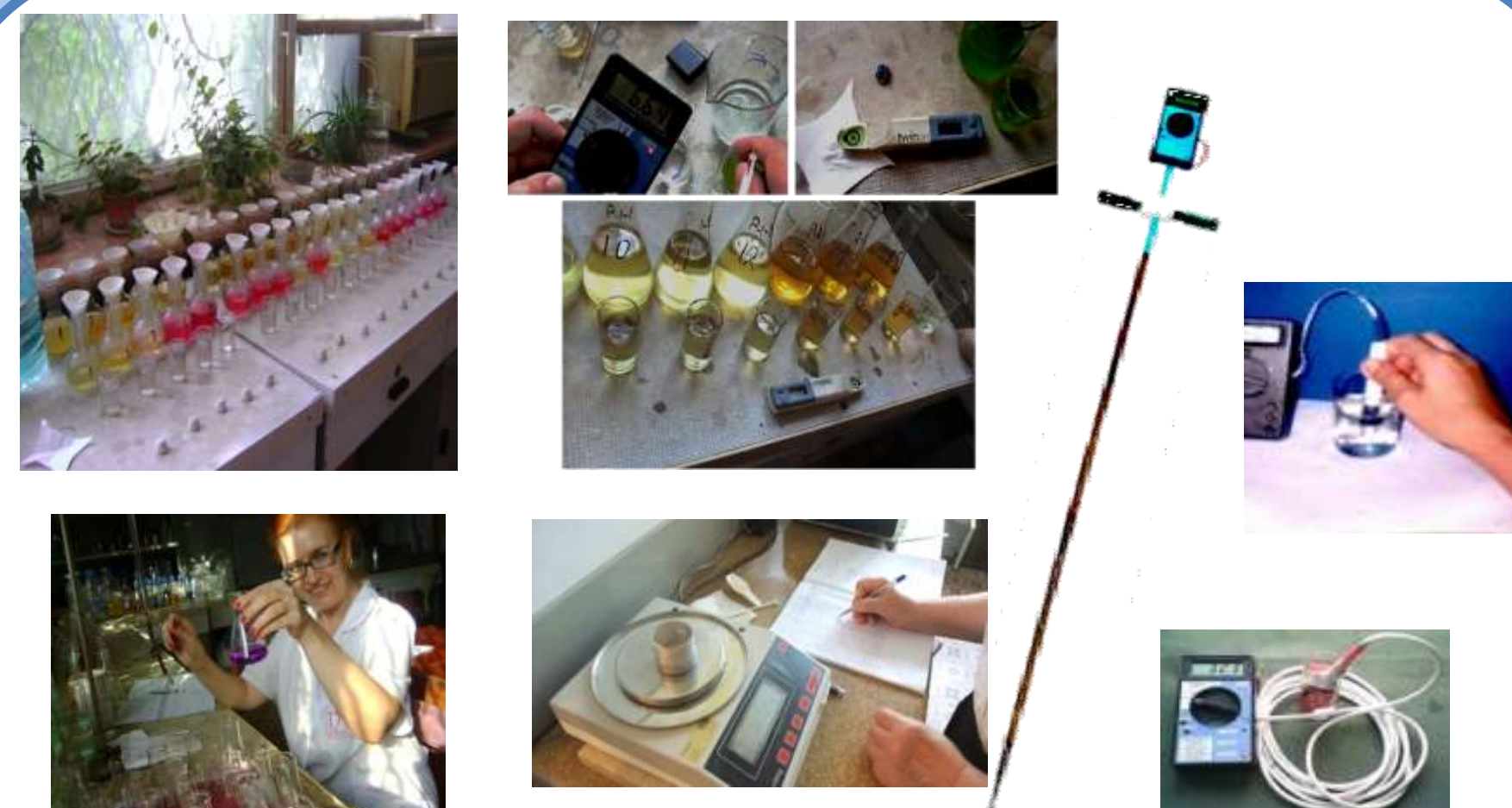
How to apply: sprinkling of soil with 10% solution before leaching

The research experiments were carried out from 2015 under different conditions: laboratory column, cultivation pot and in the field. Loam and sandy loam soil with a salinity ranging from 6 to 10 dS/m from the middle reaches of the Syrdarya River were used in the experiments.

METHODOLOGY



Experiments in soil columns: leaching and irrigation simulations, dose-finding and application technology



Experiments on moisture, salinity and chemical composition of soil before and after the treatment with preparations



Experiments in cultivation pots (soil tanks): refinement of quantity changes in soil

RESULTS

Effects of biologics (FOSSIM, SERHOSIL) on moisture accumulation in soil

