

# INTERNATIONAL CONFERENCE ON BIO- AND PHYTO-REMEDIATION TECHNOLOGIES FOR CONTAMINATED AGRICULTURAL SOIL TOWARDS GREEN AGRICULTURE

16-17 APRIL 2024 • ALMATY



It is estimated that around half of the world's quantities of obsolete pesticides can be found in the area of the former Soviet Union and a large portion of those in Central Asia. The region was an important centre for agriculture and particularly cotton production during Soviet times, with mandatory pesticide application and over-supply.

Weaknesses in the capacity of responsible institutions and actors to effectively manage pesticides and associated wastes throughout their life-cycle and gaps in the legal and regulatory framework in the region have led to substantial accumulation of obsolete pesticides stockpiles. The burial of obsolete stocks in so-called polygons, the loss of control over pesticide stores after the end of the Soviet Union, and the longstanding overuse of pesticides has led to large scale contamination of agricultural soils. In Kyrgyzstan, Kazakhstan and Tajikistan, soil in many agricultural areas is contaminated above human health levels by POPs and heavy metal based pesticides, which creates health risks and leads to food residues. This all requires urgent remediation measures. Clean soil is needed to ensure safe production, also with a view that many of the countries strive to export food to EU markets, which means that the strict EU-levels on residual contamination in foodstuff must be met.

Remediating the large volumes of contaminated agricultural soil in Central Asia will need cost-effective approaches, to have a realistic chance to be implemented. Hence,

the project under its Component 1 initiated trials on bioremediation and phytoremediation of soils contaminated by POPs and heavy metals in Kyrgyzstan and Kazakhstan. While successful, these trials are only at a small scale and there is a need to scale up the tested approaches to industrial scale in a next step. Also, awareness among farmers on soil contamination, better resp. reduced use of pesticides and solutions for cleaning agricultural soil needs to be increased.

The meeting shall 1) discuss the potential of bio- and phyto-remediation as well as of ecosystem-based solutions for time- and cost-efficient decomposition of chlorinated pesticides and transformation of heavy metal compounds, 2) lead to a better understanding of the limitations (soil type, pollution type, climate, etc.) of these methods, 3) present the FAO checklist to prepare remediation actions, 4) discuss next steps needed to scale up approaches to larger (industrial) field sizes, and 5) promote awareness raising work with farmers to reduce pesticide use and protect soil as a resource.

JOIN THE CONFERENCE



## MAIN OBJECTIVES

- 1 Generate awareness on the scale of agricultural soil contamination, related hazards, economic issues for farmers, and the need for acting
- 2 Share information on environment-friendly, cost-effective technologies and approaches appropriate to remediate substantial areas of contaminated agricultural soil. Understand opportunities, application scenarios, challenges and limitations
- 3 Initiate establishment of a working group promoting solutions for reclaiming agricultural soil in Central Asia

## EXPECTED RESULTS

- 1 Recommendations for further development and scale-up of bio-/phyto-remediation and other nature-based solutions in the Central Asia countries and their scale up to larger field sizes provided
- 2 Planning and management process for soil remediation introduced
- 3 Establishment of a Central Asia network/working group on remediation of contaminated agricultural soil initiated

## PARTICIPANTS

The Conference's target audience includes representatives of government agencies, research/educational institutions, related environmental and agricultural projects, and civil society organizations as well as international consultants from FAO and other organisations.

## REGISTER

## AGENDA

### 16 APRIL 2024 • HOTEL "INTERCONTINENTAL ALMATY" • HYBRID

09.00 -09.30	Registration & morning coffee
09.30 -09.40	<b>Opening statements</b> <b>Assel Kassenova</b> , Ministry of Ecology and Natural Resources of the Republic of Kazakhstan <b>Zhanyl Bozayeva</b> , Programme Officer/Team Leader, FAO <b>Tania Santivanez</b> , Lead Technical Officer/Agricultural Officer, FAO
<b>Session 1: Global and regional efforts to address contaminated agricultural soil and related hazards</b> Moderator: <b>Tania Santivanez</b>	
09.40 -10.40	<b>FAO/GEF project "Lifecycle Management of Pesticides and Disposal of POPs Pesticides in Central Asian countries and Türkiye": Challenges by contaminated agricultural soil, bio- and phyto-remediation trials</b> <b>Saltanat Bayeshova</b> , National Team Leader Kazakhstan, FAO <b>Releasing POPs contamination from human body</b> <b>Rakhmanbek Toichuev</b> , Institute of Medical Problems, National Academy of Sciences of the Kyrgyz Republic <b>Results from a pesticide exposure assessment in three Central Asian countries and pesticide risk communication in the region</b> <b>Birim Mor</b> , Consultant on pesticide risk communication, FAO <b>FAO's Global Soil Partnership: The GSP goals for managing contaminated agricultural soil to return it to production</b> <b>Most important pollutants in agricultural soil, FAO action list for preparing remediation projects for contaminated soil</b> <b>Sergejus Ustinov</b> , FAO Global Soil Partnership
10.40 -11.15	Group photo & Coffee Break
<b>Session 2: International experience in managing contaminated soil</b> Moderator: <b>Stephan Robinson</b>	
11.15 -12.00	<b>Available options for managing low-/mid-/high-contaminated soils</b> <b>Guido van de Coteleret</b> , Tauw, The Netherlands <b>Wetlands for managing contaminated areas and water run-offs from contaminated areas</b> <b>Carlos Arias</b> , Department of Bioscience, Aarhus University <b>Ecosystem-based solutions for contaminated soil management and remediation. A global overview</b> <b>Sergejus Ustinov</b> , FAO Global Soil Partnership
12.00 -13.00	<b>PANEL DISCUSSION OF COUNTRY EXPERIENCE</b> (Moderator: Zsuzsanna Keresztes) <b>Microbiological remediation of soil contaminated with organochlorine pesticides</b> <b>Konul Gahramanova</b> , Institute of Chemistry of Additives, Azerbaijan <b>Türkiye phyto-remediation of heavy metals and pesticide contaminated soils</b> <b>Öznuur Karaca</b> , Department of Geological Engineering, Canakkale Onsekiz Mart University, Türkiye <b>Bio-remediation experience in different countries</b> <b>Burak Anadolu</b> , Project Manager, DND Biotech, Italy <b>A global approach for recovery of arable land through Improved phyto-remediation coupled with advanced liquid biofuel production and climate-friendly copper smelting process</b> <b>Snežana Malešić</b> , Department of Chemistry, Biochemistry and Environmental Protection, University of Novi Sad, Serbia <b>Phytoremediation experience in USA, Ukraine and Czech Republic</b> <b>Valentina Pidlisyuk</b> , Jan Evangelista Purkyně University, Usti nad Labem, Czech Republic <a href="#">Questions &amp; Answers</a>
13.00 -14.00	Lunch
<b>Session 3: Trialling bio- and phyto-remediation in Central Asia</b> Moderator: <b>Assel Kassenova</b>	
14.00 -15.45	<b>Trialling bio-remediation in Kazakhstan</b> <b>Togzhan Mukacheva</b> , Professor, al-Farabi Kazakh National University, Almaty <b>Trialling bio- and phyto-remediation in Kyrgyzstan</b> <b>Tinatina Doolotkeldiyeva</b> , Professor, Kyrgyz-Turkish Manas University, Bishkek <b>Issues revealed by ecotoxicological assessment of POP-pesticides in Almaty region.</b> <b>Trialling phyto-remediation in Kazakhstan</b> <b>Assil Nurzhanov</b> , Professor, Institute of Plant Biology and Biotechnology, Almaty <b>How to scale up bio-remediation to large soil areas</b> <b>Burak Anadolu</b> , Project Manager, DND Biotech, Italy <a href="#">Questions &amp; Answers</a>
15.45 -16.15	Coffee break
<b>Session 4: Establishment of a Central Asia working group on contaminated soil</b> Moderators: <b>Sergejus Ustinov</b> , <b>Stephan Robinson</b>	
16.15 -17.00	<b>Discussion on</b> • Establishment of a Central Asia working group on remediation of contaminated agricultural soil • Development of a road map for reclaiming agricultural soil <b>Recommendations</b>
17.00 -17.15	Wrap up
19.00	Dinner

### 17 APRIL 2024 • VISIT TO REMEDIATION PILOT SITE IN SAIMASAI VILLAGE AND TO INTEGRATED PEST MANAGEMENT (IPM) TRIAL ORCHARDS IN BAIDIBEK VILLAGE

On the second day of the International Conference, the remediation trial site in **Saimasai village**, Almaty oblast will be visited. The site is located next to a former pesticide store and in 2023 trials have been conducted with the aim to test effective phyto- and bioremediation methods. The experts from the Institute of Plant Biology and Biotechnology will explain the specifics of their work and achieved intermediate results.

To showcase the promotion activities of IPM within the project, a site visit to the IPM trial apple orchards in **Baidibek village**, Enbekshikazakh rayon, Almaty oblast, will be organized. These trials, initiated in 2023, serve as a practical demonstration of sustainable agricultural practices relying on minimum use of pesticides and alternative, non-chemical methods. During the orchard visit, attendees will witness various environmentally friendly and highly effective IPM techniques. Local farmers, who have benefited from these practices, will share their experience and views on the practicality of the IPM methods. Additionally, experts from the Institute of Plant Protection and Quarantine will present trial results and discuss the ongoing IPM initiatives in Kazakhstan. The visit also includes the demonstration of unmanned aerial spraying equipment, showcasing technological advancements in pest management.

Note: Participants not interested in visiting the IPM test site can return to Almaty, for which separate transport will be organized.

08.00 -09.30	Travel to Saimasai village
09.30 -10.30	<b>Field visit:</b> Bio- and phytoremediation pilot site next to former pesticide store
10.30 -11.00	Travel to Baidibek village
11.00 -12.00	<b>Demonstration of IPM trials conducted in Zhenis Farm apple orchard research field</b> <b>Discussion with apple growers:</b> Experience made using IPM practices and resulting changes in practices
12.00 -13.30	Lunch
13.30 -15.00	Return to Almaty