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THE GREENLAND PROJECT: GENTLE REMEDIATION OF TRACE ELEMENT CONTAMINATED LAND

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Abstract

Gentle remediation options (GRO) include various and in general plant-based approaches to remediate trace element contaminated soils at low cost and without significant negative effects for the environment. Although GRO comprise very innovative and efficient technologies, they are still not widely used as practical site solution due to several reasons of hindrance. Greenland will solve the remaining problems and make GRO ready for practical application.

Contamination of soils with trace elements is worldwide still one of the major environmental problems. Conventional technologies for soil remediation are usually very expensive and may negatively affect or destroy soil structure and functions. Gentle soil remediation options, however, comprise environmentally friendly technologies that have little or no negative impact on the soil. The main technologies are phytoextraction, in situ immobilization and assisted phytostabilization. Although major progress has been achieved on the lab scale, success stories obtained on the field are still limited, in particular for phytoextraction. Also, the issue of valorization of the potentially contaminated plant biomass has insufficiently been addressed so far. Furthermore, further development is needed regarding the adequate determination of endpoints of GRO. Finally, the application of GRO as practical site solution may be hindered by legal frameworks and by insufficient knowledge of the decision makers. Therefore, an EU-FP7 (KBBE-2010-4) has been launched on January 1 2011 to address these issues and to make GRO ready for use as practical site solution. The project includes the following work packages:

- Sustainable management adapted to trace element contaminated soils and deployment of GRO at field scale (WP1)
- Valorisation of plant biomass produced on trace element contaminated sites (WP2)
- Harmonization of methods to assess the bioavailability of trace elements and development of a tool set to monitor the sustainability of GRO (WP3)
- Improving GRO through plant selection and modifications in soil trace element bioavailability (WP4)
- Appraisal of current GRO practice, and development of implementation guidance and decision support frameworks (WP5)