

Program	Program NUCLEU PN06-12 03 12
Project title (ENG):	The use of biosolids mixed with zeolite supports polihidroxizi interspersed with aggregates of Al recovery and soil remediation
Project title (RO):	Utilizarea unor biosolide în amestec cu suporturi zeolitice intercalate cu agregate de polihidroxizi de Al pentru recuperarea si remedierea solurilor
Duration	2005-2008
Team Leader	Senior Researcher Eng Ladislau ANDRES
Summary ENG (short description)	Fertilization of soils with high level of pollution with heavy metals. Sequence analysis of the distribution of metals in polluted soil components that polluted and treated. Anaerobically stabilized layer fertilized with biosolids material is fined Tuff-borne type Al _n and grown in-situ for the purpose of determining the degree of germination, the tolerance of plants that adaptability which can then be used to re-vegetation arid areas. It has been followed the degree of bioaccumulation of metals in plant tissue in the presence of a supported materials immobilization type (tuff-Gln) of the metal in the surface and to reduce their bioavailability. The results relate to the situation when the polluted soil is fertilized with biosolids. Developing a method of treatment of soils polluted with heavy metals with biosolids. Developing a model for treatment of soils polluted with heavy metals supported tuff, a model for monitoring the bioavailability of metals from polluted soils, plant.
Summary RO (short description)	Fertilizarea unor soluri cu gradul de poluare mare cu metale grele. Analiza secvențială a repartizării metalelor pe componente de sol poluat respectiv poluat și tratat. Stratul fertilizat cu biosolide stabilizate anaerob este amendat cu materiale suportate de tip tuf-Al _n și cultivat in-situ în scopul determinării gradului de germinare, a gradului de toleranță respectiv de adaptabilitate a unor plante care ulterior pot fi utilizate la revegetarea zonelor aride. S-a urmărit gradul de bioacumulare a metalelor în țesutul plantelor în prezența unui agent de imobilizare de tipul materialelor suportate (tuf-Al _n) a metalelor în sol, respectiv de reducere a biodisponibilității acestora. Rezultatele se raportează la situația când solul poluat nu este fertilizat cu biosolide. Dezvoltarea unei metode de tratare a solurilor poluate cu metale grele cu biosolide. Elaborarea unui model de tratare a solurilor poluate cu metale grele cu tuf vulcanic suportat, a unui model de monitorizare a biodisponibilității metalelor din soluri poluate, pentru plante.
Dissemination of results	
Full-paper BDI	Bogatu C., Mășu S., Dragomir N., Negrea P., The use of sequential extraction for characterization of polluted soils, <i>Chemical Bulletin, Series of Chemistry and Environmental Engineering</i> , 2006 , 52(65), 1-2., 61-63, ISSN L 1224-6018, ISSN print 1224-6018.
	Lixandru B., Trandafir G., Mășu S., Moscalu F., Researches regarding the air lead and zinc bioaccumulation in the corticolous lichens, <i>Lucrări Științifice Zootehnice și Biotehnologii</i> , 2006 , 39 (1) 192-196, ISSN 1221-5287
	Lixandru B., Mășu S., Bogatu C., Dragomir N., Peț I., Pricop A., Studies of zinc bioaccumulation process in cereals from polluted soils versus rain regim, <i>Lucrări Științifice Zootehnice și Biotehnologii</i> , 2006 , 39 (1), 185-190, ISSN 1221-5287.

	<p>Bogatu C., Lixandru B., Andres L., Mășu S., Mosoarca G., Heavy Metals Immobilization in Soils by Using of Supported Volcanic Tuff and of Biosolids, <i>Chemical Bulletin, Series of Chemistry and Environmental Engineering</i>, 2007, 52(66), 1-2, 31-33, ISSN 1221-5287.</p> <p>Lixandru B., Uruioc S., Mășu S., Bogatu C., Pricop A., Influence of agricultural pollutants on the greenhouse effect, <i>Lucrări Științifice Zootehnice și Biotehnologii</i>, 2007, 40, (1), 252-257, ISSN 1221-5287</p> <p>Mășu S., Pricop A., Turuga L., Phytoremediation methods of soil contaminated with heavy metals, <i>Annals of University of Timișoara, Series of Chemistry</i>, 2008, 17 (2), 7-12, ISSN 1224-9513, WOS:000184327300009.</p> <p>Mășu S., Uruioc S., Dragomir N., Pricop A., Decrease of heavy metal bioaccumulation in plants through soil amendment with pillared volcanic tuff, Cluj, <i>Studia Universitaria Babes-Bolyai, Geologia, Special Issue, MAEGS</i>, 2009, 16, 157-160.</p> <p>Mășu S., M. Albușescu, L. Turgă, I. Dura, Cadmium and Zinc Biodisponibiliy in Contaminated Soils, <i>Annals of University of Timișoara, Series of Chemistry</i>, 2009, 18 (3), 60-63, ISSN 1224-9513, WOS:000184327300009.</p> <p>Albușescu M., Turuga L., Popovici H., Mășu S., Uruioc S., Bulz D., „Study Regarding the Heavy Metals Contents (Iron, Manganese, Copper and Zinc) in Soil and Vitis Vinifera in Vineyards from Caras-Severin County”, <i>Annals of University of Timișoara, Series of Chemistry</i>, 2009, 18(3), 44-47, ISSN 1224 9513, WOS:000184327300009.</p> <p>Mășu S., V. Rus, N. Dragomir, Uruioc S., M. Albușescu, „Biosolids and Volcanic tuff Influence Over Uptake Coefficient of Cadmium and Zinc from Polluted Soils in Mize Cultivation”, <i>Journal of Engineering, Annals of Faculty of Engineering Hunedoara</i>, VII (3), 45-48, ISSN 1584 – 2665</p> <p>Albușescu M., Turuga L., Popovici H., Mășu S., Uruioc S., Kiraly L. Z., „Study Regarding the Heavy Metals Content (Lead, Nickel, Chromium, Cadmium) in Soil and Vitis Vinifera in Vineyards from Caras-Severin County”, 2009, <i>Annals of University of Timișoara, Series of Chemistry</i>, 18(3), 52-55, ISSN 1224-9513, WOS:000184327300009.</p>
Conferences (platform, poster, abstract / full-paper	<p>Lixandru B., Mășu S., Trandafir G., Rus V., Phytextraction of zinc from polluted soils under amended conditions, Proceedings of the 25 September, 2005, <i>The 12th Symposium on Analytical and Environmental Problems</i>, Szeged, Ungaria, Proceedings 963-219-675-9</p> <p>Lixandru B., S. Mășu, C. Bogatu, N. Dragomir, I. Peș, A. Pricop, Studii of zinc bioaccumulation process in cereals from polluted soils versus rain regime, 10 -11 mai, 2007, <i>Simpozion` Stiintific International „Cresterea Animalelor in perspectiva unei agriculturi sustenabile”</i>, Timisoara, România. 185-190</p> <p>Bogatu C., Mășu S., Electroremediation of soils polluted with zinc and copper, 24 septembrie, 2007, <i>The 14th Symposium on Analytical and Environmental Problems</i>, Szeged, Ungaria, Proceedings, 13-16, ISBN 978-963-87720-0-8.</p> <p>Mășu S., Bogatu C., Lazarovici M., Metals extraction from polluted soils by using of pillared zeolite and <i>Vicia sativa</i>, , 24 septembrie, 2007, <i>The 14th Symposium on Analytical and Environmental Problems</i>, Szeged, Ungaria, Proceedings, . 176-179, ISBN 978-963-87720-0-8.</p>

	<p>Mășu S., Translocation factor of metals from soils polluted with cadmium and zinc in barley crop, 22 septembrie, 2008, <i>The 15th Symposium on analytical and environmental problems</i>, Szeged, Hungary, Proceedings. 138-141 ISBN 978 963 482 903 4</p>
	<p>Mășu S., Pricop A., Biosolids influence in metals bioaccumulation from barley grain, 22 septembrie, 2008, <i>The 15th Symposium on analytical and environmental problems</i>, Szeged, Hungary, Proceedings. Szeged, Hungary, 146-149, ISBN 978 963 482 903 4</p>
	<p>Jurjescu A., S.Mășu, P. Pîrșan, F. Imbrea, V. Rus, Hordeum sp.- a potential crop for phytoremediation and its biomass utilization, 23-27, August 2010, <i>7th SER European Conference on Ecological Restoration</i>, Avignon, France</p>
Patents	<p>Ladislau A., Mășu S., Rus V., Bogatu C., Botău D., Cochei D., Ihos M., Demetrovici L., Demetrovici L., Chira D., <i>Procedure for preparation of some Tuf-Aln suported</i>, Brevet de invenție 122630 B1/30.10. 2009, Oficiul de Stat pentru Invenții și Mărci, București,</p>