Program	Program NUCLEU PN 09-13-03.06
Project title (ENG):	**Harnessing the purpose of vegetation municipal sludge slag heaps specific plants of meadows,**
Project title (RO):	**Valorificarea nămolurilor orăşeneşti în scopul vegetării haldelor de zgură cu plante specifice de pajişti**
Duration	2009 -2014
Team Leader	Senior Researcher Eng Valeria Nicorescu
Summary (short description) ENG	The slag of vegetation studies with various plant species was performed by comparative analysis of parameters: 1.the germination degree and the percentage of the total dry plants sprung; 2. coverage of sown areas; 3. biometric features of plants in different phenological phases of development; 4. the fruit yield; 5. The resulting amount of biomass; 6. efficiency to reduce pollutants in experimentally variants cultivation during the vegetative cycle of cultivation; 7. reducing pollutants in contaminated soils fertilized and cultivated; 8. degree of accumulation of metals in different parts of plants: roots, stems and seeds of plants harvested. Developing variants of technological processes of grassing / phytoremediation of the slag and ashes resulting from burning lignite power plants fertilized with different biological sludge in the absence / presence of amendments: volcanic tuff based xlinoptilolit indigenous and / or bacterial inoculum.
Summary (short description) RO	Studiile vegetării haldelor de zgură cu diferite specii de plante, s-a realizat prin analiza comparativă a parametrilor: 1.gradul de germinare şi procentul de plante uscate din total rasarite; 2. gradul de acoperire a suprafetelor insamintate; 3. caracteristici biometrice ale plantelor în diferite fenofaze de dezvoltare; 4. gradul de fructificare; 5. cantitatea de biomasa rezultata; 6. eficienţa de reducere a poluanţilor din variantele exoerimentale cultivare pe perioada ciclului vegetativ al culturii; 7. reducerea poluanţilor din solurile poluate fertilizate si necultivate; 8. gradul de acumulare de metale in diferite parti ale plantelor : radacini, tulpini şi seminţele de plante recoltate. Elaborarea de variante de *procese tehnologice de înierbare /fitoremediere a haldelor de zgură şi cenuşă rezultată de arderea lignitului în termocentrale fertilizate cu diferite nămoluri biologice in absenta/prezenta unor amendamente :tuf vulcanic indigen pe baza de clinoptilolit si/sau inocul bacterian.*
Dissemination of results	
Full-paper ISI	**Mâşu S.,** Jurj N. L., Studies to limit bioaccumulation of heavy metals in biomass grown on lignite fly ash deposits, *Revista de Chimie*, **2012,** 63(12), 1303-1311, WOS 000313229100021, ISSN:0034-7752.
	Mâşu S., Burtica G., Jurj N. L., Albulescu M., Aspects of Sustainable Development: Fly Ash Deposits, Biosolids,Contaminated Biomass, *Studia UBB Chemia*, **2012.** LVII(3),249-258, WOS 000318592900029, ISSN1224-7154, printed ISSN 206 -9520 online ISSN-L: 1224-7154
	Mâşu S., Rus V.,Studies Regarding the Establishment of Perennial Plant Communities Stimulated with Biosolids on Fly Ash Dumps, *Journal of Environmental Protection and Ecology*, **2013,** 14(1), 204-206, WOS 000317437400024, **ISSN:** 1311-5065.

	Mâşu S., Rus V., Efficiency of Fertilisers in Restoring Ecosystems on Fly Ash Deposits, *Journal of Environmental Protection and Ecology* **2013,** 14(3), 896-900, WOS 000326128100011, **ISSN:** 1311-5065.
	Mâşu S., Rus N., Mariana A., Studies on Plant Growth and Metal Bioaccumulation in Crops on Fly Ash Disposal Site, *Journal of Environmental Protection and Ecology,* **2013,** 14(3),.986-990, VOS 000326128100022, **ISSN:** 1311-5065
	Mâşu, S.; Morariu, F.; Lixandru, B. Popescu D Ciulan V. Morariu S.,Phytostabilization and ecological restoration of inert fly ash dump through adequate plants**,** Current opinion in biotechnology **2013,** Volume: 24 Supplement: 1 Pages: S71-S71, ISSN 0958-1669, WOS000032298100178
	Nicorescu V., Masu S., Brehui C., Predetermination of amendments for the enhanced phytoremediation of fly ash dumps, *Revista de Chimie*,**2014,** 65(11),1332-1335,WOS 000345946300016, ISSN:0034-7752,
	Mâşu S., Nicorescu V., Popa M., Slag and Fly Ash Dump Treatment with Biodegradable Waste Herbaceous Vegetation Purpose, **2015,** *Journal of Environmental Protection and Ecology* , 16 (13), 968-971, WOS 000363091800019, **ISSN:** 1311-5065
	Mâşu S., Jurj N. L., Lixandru B., Burtica G., Application of fly ash as amendment in agricultural field of Avena sativa, *Environmental Engineering and Management Journal*, **2016**, 15, (12),)ISSN 1582-9596
Full-paper BDI	**Mâşu S.,** Pricop A., Morariu F., Studies regarding the decrease of heavy metal accumulations in herbaceous plants tissues grown on fly ash dumps, *Scientific Papers Animal Sciences and Biotechnologies*, **2010,** 43 (2), 103-107, ISSN 1221-5287, E-ISSN 1841-9364).
	Pricop A., **Mâşu S.,** Lixandru B., Dragomir N., Morariu F. ,Aspects regarding the installation of some invasive weeds species on old ash dumps, *Scientific Papers Animal Sciences and Biotechnologies*, **2010,**.43 (2), 133-137, ISSN 1221-5287, E-ISSN 1841-9364.
	Morariu F., **Mâşu S.,** Dragomir N., Rus V., Demetrovici L., Uruioc S., Popescu D., Jurjescu A., Indicator of Bioavailability of Heavy Metals in Phyto-Stabilized Processes of Fly Ash Deposits, **2010,** *Scientific Papers Animal Science and Biotechnologies*, 2011,44(1),493-496, ISSN-1221-5287, E-ISSN 1841-9364,
	Mâşu S., Dragomir N.,The Effect of Applied Organic Fertilizers on the Bioavailability of Heavy Metals in *Lolium Perenne*, Cultivated on Fly Ash Deposits, *Scientific Papers Animal Science and Biotechnologies*, **2011**, 44 (1), 218-222, ISSN-1221-5287, E-ISSN 1841-9364.
	Morariu F., **Mâşu S**, Popescu D., Behaviour of *Onobrychis viciifolia* Growing on Fly Ash Experimental Parcels, *Scientific Papers* Animal Science and Biotechnologies, **2011**,44(1),489-492 ISSN-1221-5287,E-ISSN 1841-9364
	Pricop A., **Mâşu S.,** Lixandru B., Morariu F., Dragomir N., Laffont-Schwob I., Popescu D., Strategies for Covering Fly Ash Dumps with Plant Species Suitable for Phytostabilization, *Scientific Papers Animal Science and Biotechnologies*, **2011**, 44 (1), 229-234, ,ISSN-1221-5287,E-ISSN 1841-9364
	Mâşu S., Dragomir N., Morariu F., Jurj L.N., Popescu D., The bioaccumulation of heavy metals in barley (*Hordeum vulgare L*) cultivated on fly ash dump mixed with compost and natural zeolite materials, *Scientific Papers Animal Science and Biotechnologies*, **2012,**

Full-paper BDI	45 (2), 237-241,ISSN,print 1841-9364 ISSN,online 2344-4576ISSN-L 1841-9364,(former ISSN 1221-5287, E-ISSN 1841-9364).
	Morariu F., **Mâşu S**., Jurj, L. N., Popescu D., Stabilization of fly ash deposits through the selected cereal crops Stabilization of fly ash deposits through the selected cereal crops, *Scientific Papers Animal Science and Biotechnologies*, **2012,** 45 (2242-246. ISSN,print1841-9364ISSN,online 2344-4576ISSN-L 1841-9364,(former ISSN 1221-5287, E-ISSN 1841-9364)
	Lixandru B. Morariu F., Dragomir N., **Mâşu S**., Popescu D., Influence of Ash Applied to Oat Crop (*Avena sativa* L.)Grown under Organic Fertilization with Manure *Scientific Papers Animal, Science and Biotechnologies* **2012,** 45 (2).225-228, ISSN,print 1841-9364ISSN,online 2344-4576ISSN-L 1841-9364,(former ISSN 1221-5287, E-ISSN 1841-9364)
	Morariu F., **Mâşu S**., Lixandru B.,Popescu D.,Restoration of Ecosystems Destroyed by the Fly Ash Dump Using Different Plant Species, *Scientific Papers: Animal Science and Biotechnologies*, **2013,** 46 (1), 180-184 , ISSN,print 1841-9364ISSN,online 2344-4576ISSN-L 1841-9364,(former ISSN 1221-5287, E-ISSN 1841-9364)
	Lixandru B., Dragomir N., Morariu F., Popa M., Coman A., Savescu N., **Mâşu S.,** Popescu D.,Researches Regarding the Adaptation Process of the Species *Miscanthus giganteus* under the Conditions of Fly Ash Deposit From Utvin, Timis County *Scientific Papers: Animal Sciences and Biotechnologies*, **2013,** 46 (1), 199-203 ISSN,print 1841-9364ISSN,online 2344-4576ISSN-L 1841-9364,(former ISSN 1221-5287, E-ISSN 1841-9364)
	Florica M., Lixandru B., **Mâşu S.,** Popescu D., The potential of use the recyclable organic materials for soil fertilization, *Scientific Papers:Animal Science and Biotechnologies*, **2014,** 46(1), 177-181. ISSN,print 1841-9364ISSN,online 2344-4576ISSN-L 1841-9364,(former ISSN 1221-5287, E-ISSN 1841-9364)
	Mâşu S., Popa M., Morariu F., Aspects of Rehabilitation of Waste Dumps Using Herbaceous Plants, *Scientific Papers: Animal Science and Biotechnologies*, **2015.** 48(1) , 186-190, ISSN,print 1841-9364ISSN,online 2344-4576ISSN-L 1841-9364,(former ISSN 1221-5287, E-ISSN 1841-9364)
	Mâşu S., Stages of Phytoremediation. Waste Dumps of Slag and Fly Ash, Sau Slaughter House Sludge Ecological Restoration Studies of Some Biological, Inert, Hazardous Waste Deposits, *New Frontiers in Chemistry*, **2015,** 24 (2), 93-95, ISSN 2393 – 2171; ISSN-L 2393 – 2171
Conferences (platform, poster, abstract / full-paper	**Mâşu S**., Pricop A., Morariu F., Studies regarding the decrease of heavy metal accumulations in herbaceous plants tissues grown on fly ash dumps, 27-28 mai **2010,** *Simpozionul ştiinţific internaţional 65 ani de învăţământ superior şi cercetare în domeniul creşterii animalelor în Banat*, Timişoara, Romania
	Pricop A., **Mâşu S**., Lixandru B., Dragomir N., Morariu F. Aspects regarding the installation of some invasive weeds species on old ash dumps, 27-28 mai **2010,** *Simpozionul ştiinţific internaţional 65 ani de învăţământ superior şi cercetare în domeniul creşterii animalelor în Banat*, Timişoara, Romania

Conferences (platform, poster, abstract / full-paper	**Mâşu S.,** Pricop A., Rus V. ,Studies regarding the establishing of perennial plant communities stimulated with biosolids on fly ash dumps, 26-28, November, **2010,** *International Workshop "Global and Regional Environmental Protection*"Timisoara, Romania, Vol 1 .12-15, ISBN 978-606-554-210-5
	Pricop A., Mâşu S., Lixandru B., Morariu F., Dragomir N., **Revegetation strategies for covering fly ash dump with suitable plant species,** 23-27 August, **2010**, 7th SER *European Conference on Ecological Restoration*, Avignon, France.
	Mâşu S., Pricop A., Morariu F., **The indigenous tuff influence for reducing the fly ash toxicity in the revegetation process,** 23-27 August, **2010**, 7th SER *European Conference on Ecological Restoration*, Avignon, France.
	Morariu F., **Mâşu S.,** Dragomir N., Rus V., Demetrovici L., Uruioc S., Popescu D., Jurjescu A., Indicator of Bioavailability of Heavy Metals in Phyto-Stabilized Processes of Fly Ash Deposits, 26-27 Mai. **2011,** *International Scientific Symposium Bioingineria Producţiilor Animaliere*, Timişoara Romania
	Mâşu S., Dragomir N.,The Effect of Applied Organic Fertilizers on the Bioavailability of Heavy Metals in *Lolium Perenne*, Cultivated on Fly Ash Deposits, 26-27 Mai. **2011,** *International Scientific Symposium Bioingineria Producţiilor Animaliere,* Timişoara Romania
	Morariu F., **Mâşu S**., Popescu D., Behaviour of *Onobrychis viciifolia* Growing on Fly Ash Experimental Parcels, *International Scientific Symposium Bioingineria Productiilor Animaliere*, 26-27 Mai **2011,** *International Scientific Symposium Bioingineria Producţiilor Animaliere*, Timişoara Romania.
	Pricop A., **Mâşu S.,** Lixandru B., Morariu F., Dragomir N., Laffont-Schwob I., Popescu D., Strategies for Covering Fly Ash Dumps with Plant Species Suitable for Phytostabilization, 26-27 Mai. **2011,** *International Scientific Symposium Bioingineria Producţiilor Animaliere*, Timişoara Romania
	Mâşu S., Rus V., Albulescu M., Studies on plant growth and metal bioaccumulation in crops on fly ash disposal site May 26-27th, **2011,** *International UAB – BENA, Conference Environmental Engineering and Sustainable Development"* Alba Iulia, Romania,
	Mâşu S., Rus V., Efficiency of fertilizers in restoring ecosystems on fly ash deposits May 26-27, **2011,** *International UAB – BENA, Conference "Environmental Engineering and Sustainable Development*"Alba Iulia, Romania,.
	Mâşu S., Dragomir N., Morariu F., Jurj L.N., Popescu D., The bioaccumulation of heavy metals in barley (*Hordeum vulgare L*) cultivated on fly ash dump mixed with compost and natural zeolite materials, 24-25 May, **2012**, *International Scientific Symposium-Bioingineria Producţiilor Animaliere*, Timişoara, Romania
	Morariu F., **Mâşu S**., Jurj, L. N., Popescu D., Stabilization of fly ash deposits through the selected cereal crops,Stabilization of fly ash deposits through the selected cereal crops, 24-25 May, 2012, *International Scientific Symposium- Bioingineria Producţiilor Animaliere*, Timişoara, Romania.

Conferences (platform, poster, abstract / full-paper	Lixandru B., Morariu F., Dragomir N., **Mâşu S**., Popescu D., Influence of Ash Applied to Oat Crop (*Avena sativa* L.) Grown under Organic Fertilization with Manure 24-25 May, 2012, *International Scientific Symposium- Bioingineria Producţiilor Animaliere*, Timişoara, Romania.
	Uruioc S., Krstić V.,, Mâşu S., Albulescu M. Sinitean A., Uruioc C. R., Research Regarding Heavy Metals Concentrations In Wild Flora Growing On A Contaminated Soil In Serbia *(Borski Mining Area*), 24 September, **2012**, *The XVIII. International Symposium on Analytical and Environmental Problems*, Szeged, Hungary, 253-256 ISBN 978-963-306-1657.
	Morariu F., **Mâşu S.,** Lixandru B., Popescu D., Restoration of Ecosystems Destroyed by the Fly Ash Dump Using Different Plant Species, 30-31 May, **2013,** *International Scientific Symposium Bioingineria Producţiilor Animaliere,* Timişoara, Romania.
	Lixandru B., Dragomir N., Morariu F., Popa M., Coman A., Savescu N.,Mâşu S., Popescu D.,Researches Regarding the Adaptation Process of the Species *Miscanthus giganteus* under the Conditions of Fly Ash Deposit From Utvin, Timis 30-31 May, **2013,** *International Scientific Symposium Bioingineria Producţiilor Animaliere*, Timişoara, Romania.
	Mâşu, S.; Morariu, F., Lixandru B., Phytostabilization and ecological restoration of inert fly ash dump through adequate plants, MAY 16-18, **2013** *Conference: European Biotechnology Congress* , Bratislava,Slovakia
	Florica M., Lixandru B., **Mâşu S**., Popescu D., The potential of use the recyclable organic materials for soil fertilization, International *Scientific Symposium Bioingineria Producţiilor Animaliere* Timişoara 28-30 Mai, **2014,** Universitatea de Ştiinţe Agricole şi Medicină Veterinară a Banatului din Timişoara.
	Mâşu S., **Nicorescu V.,** Predetermination of Amendments for the Enhanced Phytoremediation of Fly Ash Dumps, 29-30 Octombrie **2013,** *International Symposium „The Environment and The Industry", SIMI 2013*, Bucureşti, Romania, 67 , ISSN 2344 - 3898ISSN-L 2344 – 3898.
	Mâşu S., Nicorescu V., Ladislau A., Aspecte privind utilizarea /valorificarea nămolurilor orăşeneşti, 15-17 octombrie, **2014,** *Conferinta Internaţională Practici şi Experienţe în Protecţia Mediului, ECOMEDIU*, 9-11, Arad, Romania ISBN-978-606-675-043-1
	Mâşu S., Popa M., Florica Morariu F., Aspects of Rehabilitation of Waste Dumps Using Herbaceous Plants, 25-31 May, **2015,** *International Symposium Bioingineria Productiilor Animaliere* , Timişoara., Romania
	Mâşu S., Lehr C., Pascu L. F., Jurj N. L, Optimization of phytostabilization/phytoremediation fly ash dumps through natural materials, 5 iunie **2016,** *Conferinţa internaţională, ECO ENERGY,Soluţii pentru Energie Verde*,23-26,Timişoara, Romania (ISBN 978-973-125-495-1).
Patents	Masu S., Rus V., Nicolau M., Procedeu de stabilizare a depozitelor de zgura si cenusa de termocentrala, brevet de inventive RO128743 B1/30.09.2014