

**RESEARCH and DEVELOPMENT**

**Humic Characteristics**

File No.	Projects	Participants		Completed
4.9	Base and Acid Soluble Fraction of Humic Based Materials	L. E. Liem	Black Earth Humates	2006
12.4	Silica and Dust Monitoring	-	PHH Environmental Ltd.	2002
4.1	Leonardite and Humified Organic Matter	D. M. Ozdoba J.C. Blyth R. F. Engler M. Schnitzer	Luscar Specialty Products, Luscar and ECORC – Agriculture Canada	2002
1.5	A Comparative Study on Luscar Mixture and Commercial Mixture (Peat Moss Experiment 2nd phase)	S. M. Ibrahim T. B. Goh	University of Manitoba	2001
2.6	Some Chemical and Spectroscopic Characteristics of Six Organic Ores	T. Pare H. Dinel H.R. Schulten M. Schnitzer D. Ozdoba	ECORC – Agriculture Canada and Luscar Specialty Products	2001
2.4	Comparative Study of Humic Acid-Like Material L31 (H) and a Humic Acid from the Melfort Series	M. Schnitzer H. Dinel	ECORC – Agriculture Canada	2001
12.3	Explosibility of Leonardite Dust Sample	P. Amyotte	Dalhousie University	2000
2.3	Interpretation by Principal Component Analysis (PCA) of Pyrolysis-Field Ionization Mass Spectra of Lignite Ores	T. Pare H. Dinel H.R. Schulten M. Schnitzer D. Ozdoba T. Marche	ECORC – Agriculture Canada and Luscar Specialty Products	2000
2.2	Some Aspects of Organic and Analytical Chemistry of Lignite-like Materials	M.J. Tudoret M. Schnitzer H. Dine	ECORC – Agriculture Canada	2000
1.2	A Comparative Study on Luscar Mixture and Commercial Mixture	S. M. Ibrahim T. B. Goh M. Reimer	University of Manitoba	2000
12.2	The Effect of Humic Substances on Soil Physical Properties	L. Fuller	AXYS Environmental	1999
12.1	Data Interpretation and Recommendations for Luscar Products	L. Fuller	AXYS Environmental	1999
1.1	Effect of Leonardite Application on Soil Biological Properties	D. L. Burton C. Monreal	University of Manitoba	1998

**BLACK EARTH**  
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## RESEARCH and DEVELOPMENT

## Agriculture and Turf

File No.	Projects	Participants		Completed
4.6	Increased Plants P-Uptake Due to Humic Substance Addition	L. E. Liem	Black Earth Humates	2004
4.5	Mini-Granules Product Safety	L. E. Liem	Black Earth Humates	2004
8.5	Product Technical Review (on Peat)	-	Sun-Gro	2003
4.2	Ag-Canada Temporary Registration	A. M. Henderson	Luscar Speciality Products	2002
2.8	Crop Responses to Chemical and Lignite Based Fertilizers	T. Pare M. Saharinen M.J. Tudoret H. Dinel M. Schnitzer	ECORC – Agriculture Canada	2002
2.7	Testing the Synergistic Effects of L31K, L-31KN and L31KP During Maize (Zea mays L.) Growth	T. Pare M. Saharinen M.J. Tudoret H. Dinel M. Schnitzer	ECORC – Agriculture Canada	2002
9.2	Evaluation of the Performance of Humic Acid Products in Turfgrass Management	K. Carey E. Gunn J. Dionne	Guelph Turfgrass Institute	2002
9.1	Effects of Humic Products on Growth of Creeping Bentgrass	K. Carey E. Gunn J. Dionne	Guelph Turfgrass Institute	2002
T-3	Agronomic Evaluation of Leonardite on Yield and Chemical Composition of Canola and Wheat	S. B. Dilk	University of Manitoba	2002
8.3	Evaluation of Luscar Humic Acid Product Applied with Nitrogen Sidedressed in Corn	T. Good	Vaughn Agricultural Research	2002
2.5	Response of Alfalfa to Calcium Lignite Fertilizer	T. Pare M. Saharinen M.J. Tudoret H. Dinel M. Schnitzer D. Ozdoba	ECORC – Agriculture Canada	2001
8.2	Evaluation of Luscar Humic Acid Product Applied with Nitrogen in Corn	T. Good	Vaughn Agricultural Research	2001
8.1	Evaluation of Alternative Organic Carbon Sources for Potatoes	B. Sanderson	Agricultural and Agri-Food Canada	2001

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**Agriculture and Turf**

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File No.	Projects	Participants		Completed
2.1	Effects of Humic Substances on Plants and Soil Properties	M.H. Saharinen H. Dinel M. Schnitzer	ECORC – Agriculture Canada	2000
5.4	Phosphorus Research	E. Solberg	Alberta Agriculture	2000
5.3	Copper Research	E. Solberg	Alberta Agriculture	2000
T-1	Impact of Leonardite Amendments on Soil Physical Properties of Two Soils related to Grain Production	J. A. Shaykewich	University of Manitoba	2000
5.2	Humic Acid Industry Audits Potential as a Market for Leonardite Coal	J. MacKay	Alberta Agriculture	1999
5.1	Greenhouse Evaluation of Potato Response to Humic and Fulvic Acid	P. Duplessis	Alberta Agriculture	1999



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**Horticulture**

File No.	Projects	Participants		Completed
10.5	Research on the Use of Humic Based Soil Products in Horticulture	G. H. Neilson E. Hogue D. Nielsen P. Bowen B. Rabie S. Kuchta	Agriculture Canada	2002
10.4	Field Soil Amendment Trial with Grapes	G. Neilson B. Rabie E. Hogue D. Neilson P. Bowen	Agriculture Canada	2001
10.3	Blueberry Trial	G. Neilson B. Rabie E. Hogue D. Neilson P. Bowen	Agriculture Canada	2001
10.2	Apple Seedlings, Zinc Fertigation, Greenhouse Experiment and Zinc Defficiency, Correction to Apple Seedlings, Greenhouse condition	G. Neilson B. Rabie E. Hogue D. Neilson P. Bowen	Agriculture Canada	2000
10.1	Soil Amendment as a planting Hole Amendment for Apple and Field Fertigation with BlackEarth Chelated Zinc on High Density Apple	G. Neilson B. Rabie E. Hogue D. Neilson P. Bowen	Agriculture Canada	2000



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**Drilling Fluid**

File No.	Projects	Participants		Completed
13.4	Flexible Drilling Fluid Formulation and Application	H. Dearing J. Simpson D. Huddle S. Daniel	OGS Laboratory and Newpark Drilling Fluids	2004
13.3	A Fluid Loss and Rheology Control Additive for Water-Based Drilling Fluids	D. Peteherych	Canamara United Supply	2001
1.6	Modification of Leonardite for Use as a Drilling Fluid (2nd Phase)	S. M. Ibrahim T. B. Goh	University of Manitoba	2000
1.4	Modification of Leonardite for Use as a Drilling Fluid	S. M. Ibrahim T. B. Goh	University of Manitoba	2000
13.2	Contamination Resistance Testing	-	Mud Tech Laboratories	1999
13.1	The Effects of A Lignite Material	-	Mud Tech Laboratories	1998



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## Remediation

File No.	Projects	Participants		Completed
6.2	Identifying Key Native Species and Efficient Strategies for Revegetating Sensitive Landscapes	J. Woosaree	Alberta Research Council	Ongoing
T6	Phytoremediation of Bleine-Contaminated Soil with Halophytic Plants	S. Gerraed	University of Saskatchewan	2006
4.7	Site Trial of Humalite for Hydrocarbon Bioremediations	L. E. Liem E. Ducatell	Black Earth Humates and Esso/Imperial Oil	2004
4.4	Accelerated Hydrocarbon Remediation (Field testing)	J. Blyth L.E. Liem	Hood Environmental and Luscar Specialty Products	2003
3.5	Enhanced Hydrocarbon Bioremediation through the Addition of Humic Substances Part II: Optimized Land Treatment and Static Pile Composting	L. E. Liem R. M. Facey	Hood Environmental	2003
3.4	Enhanced Hydrocarbon Bioremediation through the Addition of Humic Substances	L. E. Liem R. M. Facey I. Carrigan J. Blyth M. Fischer A. Henderson	Hood Environmental and Luscar Specialty Products	2003
7.3	Binding of Methylated Naphthalenes to Concentrated Aqueous Humic Acid	D. R. Van Stempvoort S. Lesage	National Water Research Institute	2002
7.2	Binding of Hydrophobic Organic Contaminants to Humalite Derived Aqueous Humic Products with Implications for Remediation	D. R. Van Stempvoort S. Lesage H. Steer	National Water Research Institute	2002
3.2	Humalite Applications in Environmental Remediation	R. M. Facey	Hood Environmental	2002
11.2	Black Earth Amendment Study Biodegradation Enhancement	G. Rogers S. Parenteau	Canstar Environmental Projects	2002
7.1	Humic Acid Enhanced Remediation of an Emplaced Diesel Source in Groundwater 1. Laboratory-based pilot scale test	D. R. Van Stempvoort S. Lesage K. Novakowski K. Miller S. Brown J.R. Lawrence	National Water Research Institute	2002
T-2	Effect of Dissolved Humic Substances on the Binding and Biodegradation of Polycyclic Aromatic Hydrocarbons in Soil	C. T. Smyrl	University of Manitoba	2001



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**Waste**

File No.	Projects	Participants		Completed
4.8	Effects of Humalite on Industrial Sludge Digestion	L. E. Liem M. Cardozo	Black Earth Humates and Omstead Foods	2005
3.3	Selenium Alternatives Treatment	L. E. Liem R. M. Facey	Hood Environmental	2002
3.1	Humalite Applications in Municipal Engineering	R. M. Facey	Hood Environmental	2002
4.3	Hog Manure Operations Odor Control Measures	J. Blyth	Luscar Specialty Products	2002
11.1	Potential Use of Lignite-Derived Humic Substances in Domestic, Industrial Water, Wastewater Treatment and Hazardous Waste Leachate Remediation-Feasibility	D. E. Scott	Donna E. Scott	1998



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**Mine Tailings**

File No.	Projects	Participants		Completed
T-4	Amendment of Gold Mine Tailings with Modified Humic Substances to Promote Soil Development and Plant Growth	C. Szczerski	University of Manitoba	2007
1.14	Phytoremediation and Revegetation of Mine Tailings and Bio Ore Production	S. Renault C. Szczerski E. Saileroya M. Fedikow	University of Manitoba Mess Consulting Mount Morgan Resources	2004
1.13	Air-Filled Porosity in Mine Tailing Amended with Humic Substances	S. M. Ibrahim T. B. Goh	University of Manitoba	2003
1.12	Changes in Macroaggregation and Associated Characteristics in Mine Tailings Amended with Humic Substances	M. Ibrahim T. B. Goh	University of Manitoba	2003
1.11	Amendment of Mine Tailing with Modified Humalite	S. M. Ibrahim	University of Manitoba	2003
1.10	Aggregation, Sand and Copper Distribution in Amended Mine Tailing and Mechanism of Soil Aggregation	S. M. Ibrahim T. B. Goh	University of Manitoba	2002
1.9	Aggregate Associated Carbon and Soil Aggregation in Mine Tailing Amended with <b>BLACK EARTH</b>	S. M. Ibrahim T. B. Goh	University of Manitoba	2002
1.8	Redistribution of Sand and Carbon Sequestration in Soil Aggregates	M. Ibrahim T. B. Goh	University of Manitoba	2002
1.7	Environmental Impact and Remediation of Cu-Contaminated Acid Mine Spoil: an Integrated Approach	M. Ibrahim T. B. Goh	University of Manitoba	2001
1.3	Leonardite (L-31 – CC-1) & Mine Spoil	M. Ibrahim T. B. Goh	University of Manitoba	2000



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**RESEARCH and DEVELOPMENT**      **New Product Development**

File No.	Projects	Participants		Completed
-	Low pH Liquid Humic	Black Earth Humates		Ongoing
-	Enhanced Fulvic Products	Black Earth Humates		Ongoing
15.8	Oil Soluble Humalite	Black Earth Humates		2007
15.7	Humic Enhanced Fertilizer Products	Black Earth Humates		2006
15.6	Causticized Humalite	Black Earth Humates		2005
15.5	Micronutrients Enhanced Liquid Fulvic	Black Earth Humates		2005
15.4	Mini-Granule Coarse, Blend & Fine	Black Earth Humates		2004
15.3	Minerals Enhanced Products for Animal Feed	Black Earth Humates		2004
15.2	Liquid Fulvic	Black Earth Humates		2004
15.1	Liquid Humic (Organic)	Black Earth Humates		2004
	Liquid Humic and Micronutrients	Luscar Speciality Products		2002
6.1	Humatesphere Development and Production	C. Sturgess	Alberta Research Council	2001



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