

### A. Personal Information

LAST NAME	SECOND LAST NAME	FIRST AND MIDDLE NAMES
Jara	Castillo	Alejandra Antonia

RUT	DATE OF BIRTH (DD/MM/YYYY)	SEX (M OR F)	NATIONALITY
12.491.121-4	21/03/1973	F	Chilean

ADDRESS (for correspondence)
Av. Francisco Salazar 01145, Temuco, Chile

REGION	CITY	PROVINCE
IX Región	Temuco	Cautín

E-MAIL ADDRESS	TELEPHONE NUMBERS (Indicate area code)
aljara@ufro.cl	56-45-325432

INSTITUTION AND POSITION (In the case of a University, indicate Faculty, School, Department, etc.)
Institution: Institute of Agro-Food and Chemical Sciences Department, Engineering, Sciences and Administration Faculty; La Frontera University. Position: Researcher and Lecturer

POSITION AT THE CENTER
Young Researcher

### B. Academic Formation

ACADEMIC DEGREES AND PROFESSIONAL STUDIES	UNIVERSITY	COUNTRY	YEAR
<i>Professional Titles</i>			
<i>Academic Degrees</i>			
Bachelor in Science with mention on chemistry	Universidad de Chile	Santiago	1996
Doctor in Chemistry	Universidad de Chile	Santiago	2005

### C. Academic and Work Activities

POSITION	INSTITUTION (indicate university, faculty, school, department)	TYPE OF CONTRACT	HOURS PER WEEK
Lecturer and Researcher	Chemical Sciences Department, Engineering, Sciences and Administration Faculty; La Frontera University.	Permanent	44

### D. Research lines

1. Soil Physicochemistry
2. Plant mineral nutrition
3. Soil nutrient bioavailability

### E. Investigation projects (during the last 5 years)

YEAR		PROYECT NUMBER AND TITLE	FUNCTION <i>(Principal or secondary investigator)</i>
Start date	Finish date		
2007	2010	<b>FONDECYT 11070241.</b> Distribución de nutrientes en diferentes fracciones de un Andisol. Nanotransportadores de nutrientes en el suelo ¿promotores de calidad o toxicidad en plantas?	Principal Investigator
2006	2010	<b>FONDECYT N° 1061262.</b> La fertilización nitrogenada en praderas y los mecanismos de la rizósfera asociados que regulan la nutrición y salud de especies forrajeras en andisoles del sur de Chile	Secondary Investigator
2005	2007	<b>DIUFRO 120516.</b> Tecnología de inmovilización de enzimas sobre alofán y su actividad catalítica sobre reacciones modelos del medio ambiente	Principal Investigator
2001	2003	<b>FONDECYT 2000110.</b> Estudio de la adsorción competitiva de sulfato en presencia de ligantes orgánicos e inorgánicos sobre suelos volcánicos.	Principal Investigator

### F. Publications.

Authors	Cartes, P., <b>Jara A.A.</b> , Demanet, R. and Mora, M.L.								
Manuscript Title	Urease Activity and Nitrogen Mineralization Kinetics as Affected by Temperature and Urea Input Rate in Southern Chilean Andisols								
Journal Name	Journal of Soil Science and Plant Nutrition								
Reference	Year	Issue	Pages	Stage of publication at date					
	2009	9(1)	xx-xx	Published		In press	X	Accepted	

Authors	Rosas, A., Mora, M.L., <b>Jara, A.A.</b> , López, R., Rao, M.A. and Gianfreda, L.								
Manuscript Title	Catalytic behaviour of acid phosphatase immobilized on natural supports in the presence of manganese or molybdenum								
Journal Name	Geoderma								
Reference	Year	Issue	Pages	Stage of publication at date					
	2008	145(1-2)	77-83	Published	X	In press		Accepted	

Authors	Fuentes, B., <b>Jara, A.A.</b> and Mora, M.L.								
Manuscript Title	Kinetic Changes in Phosphorus Fractions during Aerobic Degradation of Dairy Dung. ISI.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	139-149	Published	x	In press		Accepted	

Authors	Garrido, E.G., <b>Jara, A.A.</b> and Mora, M.L.								
Manuscript Title	Natural Nanoclays: Physicochemical Characterization. ISI.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	173	Published	x	In press		Accepted	

Authors	<b>Jara, A.A.</b> , Cartes, P., Manquían, K. and Mora, M.L.								
Manuscript Title	Influence of the Temperature on Urease Activity in Andisols Fertilized with Urea. ISI.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	187	Published	x	In press		Accepted	

Authors	Núñez, P., <b>Jara, A.A.</b> , Cartes, P., Demanet, R. and Mora, M.L.								
Manuscript Title	Soil Microbial Biomass and Urease Activity in a Permanent Pasture under Different Grazing Systems. ISI.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	199	Published	x	In press		Accepted	

Authors	Calabi, M., <b>Jara, A.A.</b> and Mora, M.L.								
Manuscript Title	Allophane Nanoclays: The Potential Use to Increase the Catalytic Efficiency of Acid Phosphatase Enzyme. ISI.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	174	Published	x	In press		Accepted	

Authors	Calabi, M., Cea, M., Reyes, P., <b>Jara, A.A.</b> , Sanhueza, S. and Mora, M.L.								
Manuscript Title	Comparative Study of Structural and Physical-Chemical Characteristics of Nanoparticles Extracted from two Andisols of Southern Chile: Potential in Agricultural Application. ISI.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	172	Published	x	In press		Accepted	

Authors	C. Paredes, P. Yañez, <b>A.A. Jara</b> , R. Demanet, F. Gallardo and M.L. Mora.								
Manuscript Title	Effect of Nitrogen Supply on Phosphate Dynamic in Perennial Ryegrass ( <i>Lolium perenne</i> L.) Rhizosphere. ISI.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	205	Published	x	In press		Accepted	

Authors	Cartes, P., <b>Jara, A.A.</b> and Mora, M.L.								
Manuscript Title	Selenium-Induced Amelioration of the Oxidative Stress Triggered by Aluminium in Ryegrass Plants.								
Journal Name	Journal of Soil Science and Plant Nutrition, Special Issue								
152Reference	Year	Issue	Pages	Stage of publication at date					
	2008	8(3)	230	Published	x	In press		Accepted	

Authors	Pigna, M., <b>Jara, A.A.</b> , Mora, M.L. and Violante, V.								
Manuscript Title	Effect of pH, Phosphate and/or Malate on Sulfate Sorption on Andisols								
Journal Name	Revista de la Ciencia del Suelo y Nutrición Vegetal – Journal of Soil Science and Plant Nutrition								
Reference	Year	Issue	Pages	Stage of publication at date					
	2007	7(1)	62-73	Published	x	In press		Accepted	

Authors	Cea, M., Seaman, J.C., <b>Jara, A.A.</b> , Fuentes, B., Mora, M.L. and Diez, M.C.								
Manuscript Title	Adsorption behavior of 2,4-dichlorophenol and pentachlorophenol in an allophanic soil								
Journal Name	Chemosphere								
Reference	Year	Issue	Pages	Stage of publication at date					
	2007	67(7)	1354-1360	Published	x	In press		Accepted	

Authors	Yañez, P., Paredes, C., <b>Jara, A.A.</b> and Mora, M.L.								
Manuscript Title	Rol de nitrato sobre la dinámica de la acidez de la rizósfera de <i>Lolium perenne</i>								
Journal Name	Boletín N° 23 de la Sociedad Chilena de la Ciencia del Suelo. ISSN 0716-6192								
Reference	Year	Issue	Pages	Stage of publication at date					
	2007	23	309-316	Published	x	In press		Accepted	

Authors	<b>Jara, A.A.</b> , Violante, A., Pigna, M. and Mora, M.L.								
Manuscript Title	Mutual Interactions of Sulfate, Oxalate, Citrate, and Phosphate on Synthetic and Natural Allophanes								
Journal Name	Soil Science Society of America Journal								
Reference	Year	Issue	Pages	Stage of publication at date					
	2006	70(2)	337-346	Published	x	In press		Accepted	

Authors	<b>Jara, A.A.</b> , Goldberg, S. and Mora, M.L.								
Manuscript Title	Studies of the surface charge of amorphous aluminosilicates using surface complexation models								
Journal Name	Journal of Colloid and Interface Science								
Reference	Year	Issue	Pages	Stage of publication at date					
	2005	292(1)	160-170	Published	x	In press		Accepted	

Authors	Cea, M., Seaman, J.C., <b>Jara, A.A.</b> , Mora, M.L. and Diez, M.C.								
Manuscript Title	Describing chlorophenol sorption on variable-charge soil using the triple-layer model								
Journal Name	Journal of Colloid and Interface Science								
Reference	Year	Issue	Pages	Stage of publication at date					
	2005	292(1)	171-178	Published	x	In press		Accepted	

Authors	Mora, M. L., Ordoñez, C., Cartes, P. Vistoso, E., Pino, J., <b>Jara, A.A.</b> and Demanet, R.								
Manuscript Title	Reciclaje de nitrógeno proveniente de purines en una pastura de Lolium perenne L.								
Journal Name	Boletín N° 20 de la Sociedad Chilena de la Ciencia del Suelo. ISSN 0716-6192. "Residuos Orgánicos y su Uso en Sistemas Agroforestales"								
Reference	Year	Issue	Pages	Stage of publication at date					
	2004		243-256	Published	x	In press		Accepted	

## G. Presentations at National/International Congresses

- Calabi, M., **Jara, A.A.** and Mora, M.L. (2009). Allophane nanoclays for enzymatic immobilization: potential use to increase the biocatalysis of phosphate. XIV International Clay Conference (June 14-20, Castellaneta Marina, Italy)
- Silva, A., Bifani, V., Quilaqueo, M., **Jara, A.A.** and Ihl, M. (2009). Effect of Polyphenol and Glycerol Content on Water Absorption and Permeability Properties of Carboxymethylcellulose Based Edible Films (CM-CAW-611). 10th International Controlled and Modified Atmosphere Research Conference (April, 4-7, Antalya, Turkey)
- Calabi, M., **Jara, A.A.** and Mora, M.L. (2008). Allophane Nanoclays: The Potential Use to Increase the Catalytic Efficiency of Acid Phosphatase Enzyme (S1-P37). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile)

- Garrido, E.G., **Jara, A.A.** and Mora, M.L. (2008). Natural Nanoclays: Physicochemical Characterization (S1-P36). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile)
- Cartes, P., **Jara, A.A.** and Mora, M.L. (2008). Selenium-Induced Amelioration of the Oxidative Stress Triggered by Aluminium in Ryegrass Plants (S3-P23). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile)
- Calabi., M., Cea, M., Reyes, P., **Jara, A.A.**, Sanhueza, S. and Mora, M.L. (2008). Comparative Study of Structural and Physical-Chemical Characteristics of Nanoparticles Extracted from two Andisols of Sourthen Chile: Potential in Agricultural Application (S1-P35). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile)
- **Jara, A.A.**, Cartes, P., Manquián, K. and Mora, M.L. (2008). Influence of the Temperature on Urease Activity in Andisols Fertilized with Urea (S2-P16). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile)
- Paredes, C., Yañez, P., **Jara, A.A.**, Demanet, R., Gallardo, F. and Mora, M.L. (2008). Effect of Nitrogen Supply on Phosphate Dynamic in Perennial Ryegrass (*Lolium perenne* L.) Rhizosphere (S2-P36). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile).
- Núñez, P., **Jara, A.A.**, Cartes, P., Demanet, R. and Mora, M.L. (2008). Soil Microbial Biomass and Urease Activity in a Permanent Pasture under Different Grazing Systems (S2-P30). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile).
- Fuentes, B., **Jara, A.A.** and Mora, M.L. (2008). Kinetic Changes in Phosphorus Fractions during Aerobic Degradation of Dairy Dung (S1-P10). 5th International Symposium ISMOM 2008 (November 24-28, Pucón, Chile).
- **Jara, A.A.** and Mora, M.L. (2007). Mineralización de Nitrógeno en Andisoles. XXVII Jornadas Chilenas de Química (November 20-23, Chillán, Chile)
- **Jara, A.A.** and Mora, M.L. (2007). Mecanismos de Adsorción de Boro en Andisoles. XXVII Jornadas Chilenas de Química (November 20-23, Chillán, Chile)
- Calabi, M., Reyes, P., Candia, O., **Jara, A.A.** and Mora, M.L. (2007). Nanoarcillas de Suelos Alofanánicos como Soportes Enzimáticos. XXVII Jornadas Chilenas de Química (November 20-23, Chillán, Chile)
- Núñez, P., Demanet, R., **Jara, A.A.** and Mora, M. L. (2007). Emisión de amoníaco y óxido nítrico en sistemas de pastoreo en el Sur de Chile. XVII Congreso Latinoamericano de la Ciencia del Suelo (September 17-21, León Guanajuato, Mexico)
- Núñez, P., Demanet, R., **Jara, A.A.**, Canseco, C., Misselbrook, T. H. and Mora, M.L. (2007). Effect of frequency and intensity of spring-summer grazing on nitrogen losses in Southern Chile. 14th Symposium of the European Grassland Federation, "Permanent and temporary grassland: plant, environment and economy". Gent (Belgium) 3-5 September 2007. Belgian Society for Grassland and Forage Crops Institute of Agricultural and Fisheries Research Ghent University.
- **Jara, A.A.**, Nuñez, P., Manquian, K., and Mora, M.L. (2007). Activity and Kinetic Parameters of the Urease in Andisols. The Third Internacional Conference: Enzymes in the Environment: Ecology, Activity and Applications (July 15-19, Viterbo, Italy)
- Nuñez, P., Demanet, R. **Jara, A.A.**, and Mora, M.L. (2007). Urease Activity and Biomass Carbon-Nitrogen in Spring Grazing Systems. The Third Internacional Conference: Enzymes in the Environment: Ecology, Activity and Applications (July 15-19, Viterbo, Italy)

- Cartes, P., **Jara, A. A.**, Vistoso, E., Demanet, R. and Mora, M. L. (2006). Testing a multicomponent Freundlich type equation to describe competitive adsorption between phosphate and selenite/molybdate in an Andisol of Southern Chile. Third International Symposium on Phosphorus Dynamics in the Soil-Plant Continuum. Mayo 14 -19, Minas Gerais, Brazil. 32-33 pp.
- Mora, M. L., Vistoso, E., **Jara, A.A.**, Cartes, P. and Demanet, R. (2006). Effect of phosphorus on molybdenum or boron uptake by forage species in Chilean Andisols. Third International Symposium on Phosphorus Dynamics in the Soil-Plant Continuum. Mayo 14 -19, Minas Gerais, Brazil. 214-215 pp.
- Mora, M. L., Cartes, P., Vistoso, E., **Jara, A.A.** (2006). Predicting Anion Adsorption on Andisols by the Triple Layer Model. 18th World Congress of Soil Science. Julio 9-15, Philadelphia, Pennsylvania, USA.
- Cartes, P., **Jara, A.A.**, Hyyryläinen, N. and Mora, M.L. (2006). Validation of a Multicomponent Freundlich Type Equation to Describe Mutual Interactions of Selenite and Phosphate on Andisols. Julio 9-15, Philadelphia, Pennsylvania, USA.
- **Jara, A.A.**, Cartes, P. and Mora, M.L. (2006). Thermodynamic Description of Sulfate Behavior on Allophanic Synthetic Compound. Julio 9-15, Philadelphia, Pennsylvania, USA.
- **Jara, A.A.**, Poblete, R. y Mora, M.L. (2005). Disponibilidad de Boro en suelos y su efecto tóxico en Trifolium pretense. IV Jornadas Chilenas de Química y Física Ambiental. Abril 13-15, Temuco, Chile.
- **Jara, A.A.** y Mora, M.L. (2005). Parámetros termodinámicos de adsorción de sulfato sobre un aluminosilicato recubierto con óxidos de hierro. XVI Congreso Chileno Ingeniería Química. Noviembre, Pucón, Chile.
- Núñez, P., Cartes, P., Vistoso, E., **Jara, A.A.** y Mora, M.L. (2005). Modelo de Freundlich aplicado a la capacidad de retención de aniones en Andisoles del Sur de Chile. XVI Congreso Chileno Ingeniería Química. Noviembre, Pucón, Chile.
- **Jara, A.A.** y Mora, M.L. (2005). Adsorción de sulfato y fosfato sobre alofanos naturales y sintéticos. XI Congreso Nacional de la Ciencia del Suelo. Sociedad Chilena de la Ciencia del Suelo. Noviembre, Santiago, Chile.
- Cartes, P., **Jara, A.A.**, Demanet, R. and Mora, M.L. (2004). Modeling the Selenium adsorption on Andisols by the Triple Layer Model. Environmental Significance of Mineral-Organic Component-Microorganism Interactions in Terrestrial Systems (ISMOM 2004). Septiembre 20-23, Wuhan, China.
- **Jara, A.A.**, Cartes, P., Demanet, R. and Mora, M.L. (2004). Effect of Boron adsorption by variable charge soils. Environmental Significance of Mineral-Organic Component-Microorganism Interactions in Terrestrial Systems (ISMOM 2004). Septiembre 20-23, Wuhan, China.

## H. Undergraduate teaching

- 2000 al 2002. Assistant Lecturer of Thermochemistry Course for engineering student.
- 2001-2005. Lecturer of General Chemistry Laboratory for engineering student.
- 2002-2009. Lecturer of General Chemistry Course for engineering student
- 2004-2009. Lecturer of Physicochemistry Lab for engineering student

## **I. Dissemination and Transfer**

### **J. Awards and Distinctions**

Indicate any awards or distinctions obtained.

Name: **CONICYT-Chile Doctorate Scholarship**  
Institution: Comisión Nacional de Ciencia y Tecnología  
Year: 1997  
Description: Doctorate Scholarship  
Country: Chile