

CURRICULUM VITAE

Gustavo Ariel Sznaider, Eng.

Place of Birth: Buenos Aires City, Argentina.

Date of Birth: August 17th, 1968.

Citizenship: Argentinean

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WORK EXPERIENCE

2004 – Present

Professor at the Department of Quantitative Methods and Information Systems. School of Agriculture, University of Buenos Aires (Facultad de Agronomía de la Universidad de Buenos Aires, FAUBA)

- Professor: “GIS for Precision Agriculture.” Class belonging to the graduate program. Specialization: Remote Sensing and Geographic Information Systems applied to the study of natural resources and agricultural production. Graduate School, FAUBA.
- Professor: “Simulation Models.” Class belonging to the undergraduate program: BS in Environmental Science. FAUBA.
- Professor: “General Statistics.” Class belonging to undergraduate programs. FAUBA.
- Programming and analysis of agent-based simulation models for the study of ecological and physical phenomena such as phase transitions, species oscillations, and chaos (<http://www.agro.uba.ar/microcosms>). This activity allowed me to meet and work alongside specialists from other fields, including theoretical physicist György Szabó (<http://www.mfa.kfki.hu/~szabo/>), who took an interest in the patterns observed in the simulations. Some results have been published. (See Publications.)
- Course Director: “Programming of Simulation Models in Smalltalk.”
- Professor at undergraduate and graduate programs. University of Buenos Aires. (See Teaching Positions.)
- Involvement in doctoral projects:
 - o Diego Batlla (specialized course: cereal). Development of a simulation model for hydrothermal germination and calculation of specific parameters for vegetable species.
 - o Diego Ferraro. Design of a fuzzy logic system to assess the environmental impact of pesticides and tillage in agriculture. (See Publications.)

January 2012 – Present

Member of Board of Directors at INCUBAGRO. Initiative from the University of Buenos Aires School of Agriculture (FAUBA) aimed at developing an entrepreneurial culture and helping achieve venture projects in the agriculture industry.

December 2002 – Present

CEO at GeoAgris (www.geoagris.com)

Management, research, and development of optimization systems. Projects:

- “Geographic Information System for the Follow-up and Prediction of Crop Areas.” Argentinean agricultural cooperative “Agricultores Federados Argentinos” from Asociación Argentina de Protección de las Obtenciones Vegetales, ARPOV (Argentinean Association for the Protection of Vegetable Production).
- “Development of Prediction Model for Rice Production.” Saman S.A. Molinos Arroceros Nacionales, Uruguay.
- Precision Agriculture: “Spatial optimization system for fertilizer application and seeding density. (Liag Argentina S.A., CRESUD S.A.C.I.F.y A., and other companies.)

August – October 2004

Visiting Professor. “**Masters and Specialization Course on Data Mining & Knowledge Discovery.**” School of Exact and Natural Sciences (Facultad de Ciencias Exactas y Naturales, FCEN) and School of Engineering (Facultad de Ingeniería), University of Buenos Aires.

1998 – 2011

Network Administrator and Head of New Technologies. School of Agriculture, University of Buenos Aires (FAUBA).

- Network Administrator at FAUBA. Responsible for the network design and Internet servers. (See IT Work Experience.)
- Technical Coordinator for the project “Internet 2” (managed by RETINA, <http://www.retina.ar>). Set up and use of the “Internet 2” network at FAUBA.

September 2000 – 2002

Design of a financial decision-making system for the Swiss market of life insurance companies at Logismata S.A. (<http://www.logismata.ch>). Risk analysis systems and consulting on financial products through non-linear optimization techniques.

February 2003 – 2004

Laboratory of Regional Analysis and Remote Sensing, FAUBA. Project FONTAGRO IICA-BID FTP/RF-01-3-RG “Regional characterization of forage resources in Río de la Plata and Patagonia grasslands: Developing evaluation systems and predicting primary productivity.” Development of information systems based on ecophysiological models for net primary productivity in grasslands. Such models were developed by researchers from FAUBA Ecology undergraduate class in recent decades. Input and output data are accessed through an easy-to-use Web interface.

October 1998 – 2000

Graduate Scholarship Holder from the CONICET (National Council of Scientific and Technical Research, Argentina)

As part of my scholarship work, I attended several graduate courses at the School of Agriculture and the School of Exact and Natural Sciences (FCEN), University of Buenos Aires. I have applied my gained knowledge to developing an Expert System for Agronomic Decision Making (<http://www.sznaider.com.ar/yuyos>), and studying the optimization of management decisions. These activities have allowed me to learn about global exploration and optimization algorithms, statistical techniques (multivariate analysis), neural networks, and fuzzy logic.

PROJECTS

2004 – 2005

Project Manager: “**Development of data analysis services and methods for spatial optimization of input application on agricultural production plots.**” FONTAR (Argentinean Technological Fund), Secretariat of Science, Technology, and Productive Innovation. National Agency for the promotion of Science and Technology.

2005 – 2006

UBACyT Bienes Renovables Project (Biennial Project funded by the Secretariat of Research, University of Buenos Aires). 2004–2007 (G-079) “**Analyzing landscape heterogeneity in agro-ecosystems in the Pampas and its impact on crop stability.**” Applied Quantitative Methods undergraduate class. FAUBA.

2007 – 2009

Project Manager. “**System for processing, analyzing, and exchanging data from satellite and Earth sensors to optimize agricultural production.**” FONTAR (Argentinean Technological Fund), Secretariat of Science, Technology, and Productive Innovation. National Agency for the promotion of Science and Technology.

2008 – 2009

Project Manager. “**Real-time transmission and analysis of agricultural production spatial data for a precise input management and tillage control**”. FONTAR (Argentinean Technological Fund), Secretariat of Science, Technology, and Productive Innovation. National Agency for the promotion of Science and Technology.

2010 – 2011

Project Manager. “**Systems for monitoring and analyzing aquifer and irrigation groundwater levels to optimize agricultural production**”. FONTAR (Argentinean Technological Fund), Secretariat of Science, Technology, and Productive Innovation. National Agency for the promotion of Science and Technology. Amount:

2012 – Present

Project Manager. “**Crop evolution follow-up system, for an early detection of adversity and production volumes estimation**”. FONTAR (Argentinean Technological Fund), Secretariat of Science, Technology, and Productive Innovation. National Agency for the promotion of Science and Technology. Amount:

TEACHING POSITIONS

Jefe de Trabajos Prácticos (Professor in charge of assignments), part-time position. Department of Quantitative Methods and Information Systems. School of Agriculture, University of Buenos Aires (FAUBA). June 1st 2004 – March 31st 2005

Professor. General Statistics. Class belonging to the Agricultural Engineering and Environmental Science undergraduate programs. FAUBA. 2004, 2005, 2006.

Professor. Introduction to Programming Simulation Models and Databases. Class belonging to the Environmental Science undergraduate program. FAUBA. 2005, 2006, 2007.

Ayudante de Primera (Head Teaching Assistant). Honorary position. Ecology undergraduate class. FAUBA. September 3rd 1998 – March 31st 2004. (DA 231 File 103428/98)

OTHER TEACHING POSITIONS

Designing, planning and teaching classes related to the use of models and their applications to agronomic management. Classes:

Ecology. Class from the graduate program. FAUBA. 1998, 1999.

Grain Production. Class belonging to the Agricultural Engineering undergraduate program. FAUBA. 1998, 1999, 2000, 2001.

Ecology of Weeds. Class from the graduate program. FAUBA. 1999, 2001, 2003.

Sustainability. Class from the graduate program. FAUBA. 2000, 2002, 2004

Ecophysiology basis for managing weeds in extensive crops. Class belonging to the final internship (*Ciclo de Intensificación*) from the Agricultural Engineering undergraduate program. FAUBA. 1999, 2000, 2001, 2002.

The software developed during my graduate scholarship has been added to the aforementioned classes, where it is currently used i) as an educational tool to apply the classical theory of population growth in the design of agricultural rotation; ii) to explore different choices and their impact on weed communities; and iii) as aid for agricultural planning of production sites.

IT WORK EXPERIENCE

1995 – Present

In 1995, I had the chance to be involved in the early Internet connections in Argentina. There were not commercial connections in Argentina at that time —there were only some links to some academic institutions, including *Comisión Nacional de Energía Atómica* (National Commission of Atomic Energy), *Instituto Balseiro*, and CRIBABB (Regional Center of Bahía Blanca on Applied and Basic Research). These connections were developed and achieved by the RETINA project. My involvement in this project allowed me to gain knowledge on UNIX operating systems, early Linux versions, network topology, and optical fiber connections.

Up to 1997, I coordinated the projects aimed at joining the following FAUBA institutions to the RETINA network: Graduate School, *Pabellón de Zootecnia* (Zootechnics department), Microbiology class, IFEVA (Institute of Agriculture-Related Physiological and Ecological Research) from the CONICET (National Council of Scientific and Technical Research).

As from 1998, I was hired by FAUBA to expand the network to the rest of the buildings. The network I manage today encompasses more than 17 buildings, which are interconnected by an optical fiber backbone. This network is additionally connected to “Internet 2”. The servers used run on Linux operating system, and there are 1146 registered computers.

Since then, some Linux applications have been additionally developed and spread in the community. I have also attended several events for network administration experts.

1990 – 1998. Software Development.

Software development for database management at several companies, including Automotores Rivadavia S.A., Hiteco S.R.L., Confecciones G.S., RKS importadora.

1997 – 1998. Internet Access and Website Design, Set Up, and Maintenance at Fundación Antorchas (<http://www.fundantorchas.retina.ar>).

1993 – 1995. IT Teacher. Courses on Novell Operating System. At Cocherías Paraná, Péculo Group.

EDUCATION

Agricultural Engineer. School of Agriculture, University of Buenos Aires (Facultad de Agronomía de la Universidad de Buenos Aires, FAUBA).

Graduation Year: 1998

Overall Average Grade (1-10 scale): 7.66, 4th average of class 1988

Computing. ORT Technical School. Buenos Aires City, Argentina.

Graduation Year: 1987

UNDERGRADUATE PROGRAM FINAL PAPER

Paper written as part of the final internship (*Ciclo de Intensificación*) required to obtain the Agricultural Engineer degree: Development of a conceptual framework for exploring future scenarios in agricultural plots. Example of application to the weeds issue. Grade (1-10 scale): 10.

Academic Excellence Award. DOW ELANCO Honorable Mention.

GRADUATE COURSES

Artificial Intelligence. Grade (1–10 scale): 8. Department of Computing. School of Exact and Natural Sciences (FCEN), University of Buenos Aires. 1997.

Machine Learning and Data Mining. Grade (1–10 scale): 9. Professor: Dr. Stan Matwin from the Department of Computer Science, University of Ottawa. Department of Computing. FCEN, University of Buenos Aires. 1998.

Learning robots (Reinforcement Learning). Grade (1–10 scale): 10. Professor: Dr. Claude Touzet, *Université de Aix-Marseille III*, France. Department of Computing. FCEN, University of Buenos Aires. 2000.

Statistics Grade (1–10 scale): 9. Professor: Susana Perelman. Graduate School, School of Agriculture, University of Buenos Aires (FAUBA). 2000-07-04.

Simulation models for agronomic application. Grade (1–10 scale): 8. Professor: Antonio Hall. Vegetal Production Program, Graduate School, FAUBA. 1999.

Ecophysiology of Crops. Grade (1–10 scale): 8. Professor: Dr. Antonio Hall. Vegetal Production Program, Graduate School, FAUBA. 2000-07-04.

Ecology of crops. Grade (1–10 scale): 7.1. Credits: 8. Professor: Dr. Emilio Satorre. Vegetal Production Program, Graduate School, FAUBA. 1999.

Ecology of Weeds. Grade (1–10 scale): 9. Credits: 19. Professor: Claudio Ghera, Eng. Vegetal Production Program, Graduate School, FAUBA. 1997.

Bioinformatics. 2010. Department of Computing. FCEN, University of Buenos Aires. 2000.

OTHER COURSES

Introduction to Object Technology. Professor: Alejandro Fernández. National University of La Plata. Buenos Aires Province. 1997.

Introduction to Approximate Reasoning in the Artificial Intelligence Field. Professor: Dr. Pere Garcia I Calves. Autonomous University of Barcelona. Duration: 15 h. 11th School of IT organized by the Department of Computing, School of Exact and Natural Science (FCEN), University of Buenos Aires. 1997.

Constraint Satisfaction. Professor: Dr. Pedro Meseguer from the Institute of Artificial Intelligence Research, CSIC, Spain. Department of Computing, FCEN, University of Buenos Aires. 1998.

Mathematical Analysis. Grade (1–10 scale): 9. Class belonging to the undergraduate Mathematics Program. Department of Mathematics. FCEN, University of Buenos Aires. 2003.

First International Workshop on Crop-Weed Interactions: Progress on predicting plant phenology and its use for crop and weed populations. Graduate School, FAUBA. 1997.

Weed Population Dynamics. Professor: R. Benech-Arnold, Eng. Class belonging to the final internship (*Ciclo de Intensificación*) from the Agricultural Engineering undergraduate program. School of Agriculture, University of Buenos Aires (FAUBA). 1997.

THESIS TUTORING

UNDERGRADUATE

“Comparison among different statistical methods for analyzing spatial data for corn and soybean crops in Western Buenos Aires Province. By Ignacio Ferlijwskyj. Tutor: Gustavo Sznaider, Eng. Co-Tutor: Dr. Pablo Cipriotti, Eng. 2009.

“Interaction between aquifers and summer crops in Western Sandy Pampas”. By Santiago Forteza. Tutor: Gustavo Sznaider, Eng. Co-Tutor: Esteban Jobaggy, Eng. 2008

“Development of georeferenced soil and land suitability cartography adjusted from yield maps.” Tutor: Mauricio Niborski. Co-Tutor: Gustavo Sznaider, Eng.

GRADUATE

Masters in Soil Studies. María del Pilar Muschietti. FAUBA.

CONGRESS AND SEMINAR PRESENTATIONS

G.A. Sznaider, Ignacio Ferlijwskyj, Gabriel Obregon, Marcos Sobral. Precision agriculture. A new tillage quality standardized evaluation approach. *Ingeniería 2010*. Buenos Aires City.

G. A. Sznaider, Ignacio Ferlijwskyj, Gabriel Obregon, Marcos Sobral. ADP. System of Spatial Information Processing for Optimizing Agricultural Production. *Jornadas Argentinas de Informática. Sociedad Argentina de Informática* (Argentinean Society of IT). September 2008. Santa Fe, Argentina.

G. A. Sznaider, Roxana Aragón, Juan Pablo Guerschman, Susana Perelman. Use of applied and challenging exercises for teaching descriptive statistics in Agronomy. Meeting for Professors and Researchers from the University of Buenos Aires, for the analysis of good education practices. October 29th-31st, 2008. University of Buenos Aires.

G. A. Sznaider, Roxana Aragón, Juan Pablo Guerschman, Susana Perelman. Use of applied and challenging exercises for teaching descriptive statistics in Agronomy. *VII Reunión Científica. Grupo Argentino de Biometría* (Argentinean Group of Biometrics). October 16th-18th, 2003. Mendoza, Argentina.

G. A. Sznaider, C.M. Ghera. "A conceptual framework for developing expert computer systems to aid in weed-related management decisions". 6th Mediterranean Symposium. European Weed Research Society. May 13th-15th, 1998. Montpellier, France. Publication: p. 99.

G. A. Sznaider, C.E. Ferro, C.M. Ghera. "Expert system for designing sustainable agricultural rotations." *XIX Reunión de Ecología*. April 1999. Tucumán, Argentina. Publication: p. 140.

G. A. Sznaider, D. O. Ferraro. Fuzzy logic to assess the impact of herbicide use on farm sustainability. Local and Global Solutions for the Beginning of the Century. 3rd International Weed Scientific Congress. June 2000. Foz Do Iguazu, Brazil.

Sznaider, G. A., C.E. Ferro y C.M. Ghera. "An expert system software to explore short and long term effect of cropping systems". Local and Global Solutions for the Beginning of the Century. 3rd International Weed Scientific Congress. June 2000. Foz Do Iguazu, Brazil.

PUBLICATIONS

M. D. Nosetto, E. G. Jobbagy, R.B. Jackson, G.A. Sznaider. "Reciprocal influence of crops and shallow ground water in sandy landscapes of the Inland Pampas", *Field Crops Research*, 113 (2), pp.138-148. (August 2009)

G. Szabó, A. Szolnoki, G.A. Sznaider. "Segregation process and phase transition in cyclic predator-prey models with even number of species". *Physical Review E* 76, 051921 (2007)

G. Szabó, G. A. Sznaider. "Phase transition and selection in a four-species cyclic Lotka-Volterra model". *Physical Review E* 69, 031911 (2004)

D.O. Ferraro, C. M. Ghera, G. A. Sznaider. "Fuzzy Logic to assess the potential environmental impact of pesticide use and tillage on agroecosystems". *Agriculture, Ecosystems & Environment*. Volume 96, Issues 1-3 , pp. 1-18. (June 2003)

M. Niborski, S. Urricariet, G.A. Sznaider, M. Amado, H. Rosatto. "Variability in soil moisture, sand contents and organic matter, and its association to crop yield." pp. 117-124. In S. Navone, H.G. Rosatto, F. Vilella (Eds.), *Remote Sensing applied to the environmental problem*. CIATE (Research and Remote Sensors Application Center), FAUBA. *Editorial Facultad de Agronomía*, Buenos Aires.

ARTICLES ON THE MEDIA

"Precision Agriculture. Zone Management." Magazines:

Chacra. February, 2007. (front page main article)

Apertura. Magazine on Economy and Business. March, 2007. (front page article)

IN Magazine from LAN Airlines. 2009.

LECTURES

Mundo Soja 2005. "Use of yield monitors as variability indicators." Hilton Hotel. Buenos Aires City.

Conference on Precision Agriculture. INTA (Argentina's National Institute of Agricultural Technology). 2004. INTA Manfredi, Córdoba City. Argentina.

Curso de Especialización 2005. *Asociación Argentina de Consorcios Regionales de Experimentación Agrícola* (Argentinean Association of Regional Consortiums for Agricultural Experimentation, AACREA). "Precision Agriculture: Basis for its Application to Agricultural Production and Tools for Managing Georeferenced Information."

Curso de Especialización 2006. AACREA. "Agronomic Basis for Zone Heterogeneity Management."

Mundo Agro 2006. "Developing Services with Precision Agriculture." Hilton Hotel. Buenos Aires City.

AAPRESID 2006. *Asociación Argentina de Productores en Siembra Directa* (Argentine No Till Farmers Association). "Digital Technology in Agricultural Machinery ." Rosario, Santa Fe Province, Argentina.

6th International Course on Precision Agriculture. INTA. "Systems of information processing for spatial optimization of inputs." 2006. INTA Manfredi, Córdoba City, Argentina.

2do Simposio Argentino de Reconocimiento y Manejo de la Heterogeneidad Ambiental (2nd Argentinean Symposium on Zone Heterogeneity Identification and Management). "Approximation to Detecting Zone Heterogeneity." *Bolsa de Comercio de Rosario* (Rosario Stock Market). Santa Fe Province, Argentina.

A todo trigo 2009. "Zone-Management Agriculture as a tool for agronomic decision making". Sheraton Hotel. Mar del Plata, Buenos Aires Province. May 2009.

7º Congreso Brasileiro de AgroInformática. Miniforo IBEROEKA. Federal University of Vicosa. Minas Gerais State, Brazil. September 2009.

Curso de Especialización 2010. AACREA. "Zone-Management Agriculture."

OTHER ACTIVITIES

1993 – 1997 Honorary Teaching Assistant. Plant Physiology. Class belonging to the Agricultural Engineering undergraduate program. FAUBA.

During my undergraduate course of studies, I have performed several activities as an assistant in field experiments, for sunflower and tomato crops. These experiments have been developed by research groups from the Plant Physiology undergraduate class, FAUBA.

LANGUAGE SKILLS

English — Advanced level of reading, writing, and speaking skills.

Hebrew — Elementary level of reading and writing skills, Intermediate level of speaking skills.

Portuguese — Elementary level of reading and speaking skills.

German — Beginner.