

Dr Luis Alejandro Apiolaza

School of Forestry, University of Canterbury, Private Bag 4800, Christchurch, New Zealand
telephone: +64-3-364 2126 · email: luis.apiolaza@gmail.com · web: <http://uncronopio.org>

Statement

I work at the interface of industry and academia. I have designed and implemented strategies and evaluation systems for several breeding programs. I have been responsible for the successful training of postgraduate and undergraduate students, and industry members in Australia and Chile.

Education

Ph.D. in Forest Genetics and Tree Breeding, Institute of Veterinary, Animal and Biomedical Sciences, Massey University, Palmerston North, New Zealand (1996-2000)

Thesis: 'Multiple trait improvement of radiata pine'. My work considered definition of breeding objectives from an economic perspective, efficiency aspects of multivariate prediction of breeding values, longitudinal data analyses, and early selection of superior trees.

Forest Engineer, Bachelor of Forest Science (major in Management and Silviculture), School of Forest Sciences, Universidad de Chile, Santiago, Chile (1987-1992)

Thesis: 'Genetic evaluation of two provenance-progeny tests of *Eucalyptus camaldulensis* Dehn. located in Mel-Mel and Longotoma, V Region, Chile'. The project involved prediction of breeding values and selection of genotypes that maximised return for semi-arid conditions.

Professional experience

Senior Lecturer (since 2006), NZ School of Forestry, University of Canterbury, New Zealand.

Breeding for wood quality, with emphasis on techniques for very early selection. Simulation of breeding strategies and integration of biotechnologies.

Consultant (part-time, since 2004)

Genetic evaluation and audit of evaluation systems for Australian, Chilean and New Zealand clients.

Forest Biometrician (2003-2005), Forestry Tasmania, Australia.

Evaluation of growth models and statistical consulting for the research and development branch.

Lecturer, Project Leader of Breeding Strategies and Quantitative Geneticist (2000-2003), Honorary Research Associate (since 2003), CRC for Sustainable Production Forestry and School of Plant Science, University of Tasmania, Australia.

Multivariate analysis of progeny tests, design of breeding strategies, and definition of breeding objectives. In addition, I provided technical support to industry clients and supervised postgraduate students in the area of quantitative genetics and breeding.

Research Forester, Chilean Tree Improvement Cooperative, Universidad Austral de Chile (1993-1996)

Design and analysis of genetic tests, data management and the development of breeding strategies for the members. Training industry personnel and undergraduate students in general aspects of tree breeding.

Personal

I was born in Chile, grew up in Chile, Venezuela and Argentina, and hold dual Australian and Chilean citizenships. I am married and have a four year old son. I am fluent in English and Spanish, and can read technical Italian and Portuguese.

PUBLICATIONS

Journals

Apiolaza, L.A. 2008. Invited review: Modern genetic evaluation in tree breeding. Canadian Journal of Forest Research. *In preparation*.

Apiolaza, L.A. 2008. Very early selection for solid wood quality: screening for early winners. Annals of Forest Science. *Accepted*.

Alzamora, R.M. and **Apiolaza, L.A.** 2008. A hedonic price analysis of radiata pine logs for appearance timber. Forest Science. *Submitted*.

Alzamora, R.M. and **Apiolaza, L.A.** 2008. Short note. Bioeconomic models for breeding objectives: traps and pitfalls. Silvae Genetica. *Submitted*.

Warren, E., Smith, G.B., **Apiolaza, L.A.** and Walker, J.C.F. 2008. Effect of stocking on juvenile wood stiffness for three *Eucalyptus* species. New Forests. *In press*. DOI 10.1007/s11056-008-9120-9

Alzamora, R.A. and **Apiolaza, L.A.** 2008. Review: alternative approaches for the economic valuation of wood quality traits. Journal of Forest Economics. *Submitted*.

Laffan, M., Rees, S. and **Apiolaza, L.A.** 2008. Effects of cultivation method on the early growth of *Pinus radiata* on a low quality site in north-eastern Tasmania. Tasforests **17**: 9–14

Apiolaza, L.A. 2008. Improvement objectives for short rotation forestry. New Zealand Journal of Forestry **52**(4): 28-30.

Li, Y., Dutkowski, G.W., **Apiolaza, L.A.**, Pilbeam, D.J., Costa e Silva, J. and Potts, B.M. 2007. The genetic architecture of a *Eucalyptus globulus* full-sib breeding population in Australia. Forest Genetics **12**: 167-179.

Whitlock, S.P., Dutkowski, G.W., Greaves, B.L. and **Apiolaza, L.A.** 2007. Integrating revenues from carbon sequestration into economic breeding objectives for *Eucalyptus globulus* pulpwood production. Annals of Forest Science **64**: 239-246.

Sinn, D.L., **Apiolaza, L.A.** and Moltschaniwskyj, N.A. 2006. Genetic analysis and fitness related consequences of squid personality traits. Journal of Evolutionary Biology **19**: 1437-1447.

MacDonald, M.A. **Apiolaza, L.A.**, Grove, S. 2005. The birds of retained vegetation corridors: a pre- and post-logging comparison in dry sclerophyll forest in Tasmania. Forest Ecology and Management **218**: 277-290.

Apiolaza, L.A., Raymond, C.A. and Yeo, B.J. 2005. Genetic variation of physical and chemical wood properties of *Eucalyptus globulus*. Silvae Genetica **54**: 160-166.

Whitlock, S.P., Greaves, B.L. and **Apiolaza, L.A.** 2004. The comparative economics of genetically improved seedling and coppice crops in *Eucalyptus globulus* plantations. Forest Ecology and Management **191**: 267-274.

Lopez, G.A., Potts, B.M., Vaillancourt, R.E. and **Apiolaza, L.A.** 2003. Maternal and carry-over effects on early growth of *Eucalyptus globulus*. Canadian Journal of Forest Research **33**: 2108-2115.

Whitlock, S.P., **Apiolaza, L.A.**, Kelly, C.M. and Potts, B.M. 2003. Genetic control of coppice and lignotuber development in *Eucalyptus globulus*. Australian Journal of Botany **51**: 57-67.

Lopez, G.A., Potts, B.M., Dutkowski, G.W., **Apiolaza, L.A.** and Gelid, P. 2002. Genetic variation and inter-trait correlations in *Eucalyptus globulus* base population trials in Argentina. Forest Genetics **9**: 223-237.

Alzamora, R.M., **Apiolaza, L.A.** and Ide, S. 2002. Evaluación física y económica de pérdidas en volumen debido al daño de *Rhyacionia buoliana* (Shiff.) en plantaciones de *Pinus radiata* D. Don en la Novena y Décima Regiones de Chile. [Physical and economic evaluation of volume losses due to *Rhyacionia buoliana* (Shiff.) damage in *Pinus radiata* D. Don plantations in southern Chile]. Bosque **23**: 29-42.

Apiolaza, L.A. and Garrick, D.J. 2001. Analysis of longitudinal data from progeny tests: some multivariate approaches. Forest Science **47**: 129-140.

Apiolaza, L.A. and Garrick, D.J. 2001. Breeding objectives for three silvicultural regimes of radiata pine. Canadian Journal of Forest Research **31**: 654-662.

Apiolaza, L.A., Garrick, D.J., and Burdon, R.D. 2000. Optimising early selection using longitudinal data. Silvae Genetica **49**: 195-200.

Apiolaza, L.A., Gilmour, A.R. and Garrick, D.J. 2000. Variance modelling of longitudinal height data from a *Pinus radiata* progeny test. Canadian Journal of Forest Research **30**: 645-654.

Apiolaza, L.A., Burdon, R.D. and Garrick, D.J. 1999. Effect of univariate subsampling on the efficiency of bivariate parameter estimation and selection from half-sib progeny tests. Forest Genetics **6**: 83-91.

Burdon, R.D. and **Apiolaza, L.A.** 1998. Short Note: more generalised estimation of between-trait genetic correlations using data from collateral relatives. Silvae Genetica **47**: 174-175.

Ipinza, R., García, X., **Apiolaza, L.A.**, Molina, M.P., Chung, P. and Parra, P. 1995. Variación juvenil de un ensayo de procedencias y familias de *Eucalyptus globulus* subsp. *globulus* Labill, en la séptima región de Chile. [Early genetic evaluation of a provenance-progeny test of *Eucalyptus globulus* subsp. *globulus* Labill in Chile]. Ecología **8**: 259-270.

Book Chapter

Raymond, C.A. and **Apiolaza, L.A.** 2004. Incorporating wood quality and deployment traits in *Eucalyptus globulus* and *Eucalyptus nitens*. In 'Plantation Forest Biotechnology for the 21st Century' C. Walter and Carson, M (eds). pp 87-99.

Conference proceedings

Papers

Apiolaza, L.A., Walker, J.C.F., Nair, H. and Butterfield, B.G. 2008. Very early screening of wood quality for radiata pine: pushing the envelope. SWST Conference. 10-12 November, Concepción, Chile.

Apiolaza, L.A. 2007. Breeding wood quality: from average corewood value to early bloomers. Australasian Forest Genetics Conference—Breeding for Wood quality. 11-14 April, Hobart, Tasmania, Australia.

Alzamora, R.M. and **Apiolaza, L.A.** 2007. Economic approaches for valuing wood quality. Australasian Forest Genetics Conference—Breeding for Wood quality. 11-14 April, Hobart, Tasmania, Australia.

Currie, A., Langford, G., McGhie, T., **Apiolaza, L.A.**, Snelling, C., Braithewaite, B., Vather, R. 2006. Inheritance of antioxidants in a New Zealand blackcurrant (*Ribes nigrum* L.) population. 13th Australasian Plant Breeding Conference. 18-21 April, Christchurch, New Zealand. §

Potts, B.M., Vaillancourt, R.E., Jordan, G., Dutkowski, G.W., Costa e Silva, J., McKinnon, G., Steane, D., Volker, P., Lopez, G.A., **Apiolaza, L.A.**, Li, Y., Marques, C. and Borralho, N.M.G. 2004. Exploration of the *Eucalyptus globulus* gene pool. Proceedings of the International IUFRO Conference 'Eucalyptus in a changing world' on Silviculture and Improvement of Eucalypts. 11-15 October, Aveiro, Portugal. §

Whitlock, S.P., **Apiolaza, L.A.**, Dutkowski, G.W., Greaves, B.L. and Potts, B.M. 2004. Carbon revenues and economic breeding objectives in *Eucalyptus globulus* pulpwood plantations. Proceedings of the International IUFRO Conference 'Eucalyptus in a changing world' on Silviculture and Improvement of Eucalypts. 11-15 October, Aveiro, Portugal. 146-150. §

McRae, T.A., **Apiolaza, L.A.**, Dutkowski, G.W., Kerr, R.J., Pilbeam, D.J., Powell, M.B. and Tier, B. 2003. TREEPLAN® - A genetic evaluation system for forest trees. Proceedings of the 27th Southern Forest Tree Improvement Conference, Stillwater, OK, USA.

Kerr, R.J., Dutkowski, G.W., **Apiolaza, L.A.**, McRae, T.A., and Tier, B. 2002. Developing a genetic evaluation system for forest tree improvement – the making of TREEPLAN®. Proceedings of the 7th World Congress of Genetics Applied to Livestock Production. Montpellier, France. CD-ROM communication n° 07-10. §

Apiolaza, L.A., and Greaves, B.L. 2001. Why are breeders not using economic breeding objectives? IUFRO International Symposium 'Developing the Eucalypt of the future', Valdivia, Chile. CD-ROM communication.

Kerr, R.J., Tier, B., McRae, T.A., Dutkowski, G.W., **Apiolaza, L.A.** 2001. TREEPLAN™ A genetic evaluation system for forest tree improvement. In 'Developing the Eucalypt of the Future'. 10-15 September, Valdivia, Chile. CD-ROM communication.

McRae, T.A., Pilbeam, D.J., Gore, P.L., Dutkowski, G.W., **Apiolaza, L.A.** 2001. Australian cooperative tree improvement strategy for *Eucalyptus globulus*. In 'Developing the Eucalypt of the Future'. 10-15 September, Valdivia, Chile. CD-ROM communication.

Apiolaza, L.A., Burdon, R.D., and Garrick, D.J. 1998. Effects of subsampling on open-pollinated progeny tests. 6th World Congress of Genetics Applied to Livestock Production (Tree breeding session). Armidale, Australia. Volume 27: 491-494. §

Shelbourne, C.J.A., **Apiolaza, L.A.**, Jayawickrama, K., and Sorensson, C. 1997. Developing breeding objectives for Radiata Pine in New Zealand. IUFRO Conference. Rotorua, New Zealand. 160-168. §

§ Refereed proceedings.

Posters

Hamilton, M. Potts, B.M., Harwood, C., **Apiolaza, L.A.** and Gore, P. 2004. Comparison of non-destructive assessment techniques for shrinkage and collapse in *Eucalyptus nitens*. Proceedings of the International IUFRO Conference 'Eucalyptus in a changing world' on Silviculture and Improvement of Eucalypts. 11-15 October, Aveiro, Portugal.

Lopez, G.A., Potts, B.M., Vaillancourt, R.E. and **Apiolaza, L.A.** 2003. Expresión tardía de la variación genética en un diallelo de *Eucalyptus globulus*. [Late expression of genetic variation in a diallel of *Eucalyptus globulus*]. Simposio Iberoamericano de *Eucalyptus globulus*: Tecnologías para el futuro, Montevideo, Uruguay.

Li, Y. and **Apiolaza, L.A.** 2003. Effect of connectedness between sites on the precision of GxE interaction estimation. XIX International Congress of Genetics, Melbourne, Victoria, Australia.

Whitlock, S.P., Greaves, B.L. and **Apiolaza, L.A.** 2003. An economic assessment of genetic gain and coppice productivity in second rotation plantations. XIX International Congress of Genetics, Melbourne, Victoria, Australia.

Whitlock, S.P., **Apiolaza, L.A.** and Greaves, B.L. 2002. When to replant: genetics and economics of coppicing *Eucalyptus globulus*. EUCPROD - International Conference on Eucalypt Productivity. Hobart, Tasmania, Australia.

Apiolaza, L.A., Potts, B.M. and Gore, P.L. 2001. Genetic control of peak flowering time of *Eucalyptus globulus*. IUFRO International Symposium 'Developing the Eucalypt of the future', Valdivia, Chile.

Lopez, G.A., **Apiolaza, L.A.**, Potts, B., Dutkowski, G., Gelid, P. and Rodríguez Traverso, J. 2001. Genetic parameters of *Eucalyptus globulus* in Argentina. IUFRO International Symposium 'Developing the Eucalypt of the future', Valdivia, Chile.

Whitlock, S.P., **Apiolaza, L.A.** and Potts, B.M. 2001. Breeding for sustainability in *Eucalyptus globulus*. IUFRO International Symposium 'Developing the Eucalypt of the future', Valdivia, Chile.

Ipinza, R.; White, T.L. and **Apiolaza, L.A.** 1995. A Breeding Strategy for *Eucalyptus globulus* in Chile. CRCTHF-IUFRO Conference 'Eucalyptus plantations: Improving Fibre Yield and Quality'. Hobart, Tasmania, Australia.

TEACHING AND EXTENSION

Postgraduate supervision

I have participated in projects with the following students (the format is name of student, year of completion, degree, thesis title and my role):

Tim MacDonald. started 2007. MForSc. 'Making sense of genotype by environment interaction in New Zealand'. Senior Supervisor.

Rosa María Alzamora. started 2006. Ph.D. 'Economic approaches for valuing wood quality traits'. Senior supervisor.

Matthew Gray Hamilton. 2007. Ph.D. 'Breeding methodologies for improving solid wood production in *Eucalyptus nitens*'. Co-supervisor.

David Loyd Sinn. 2005. Ph.D. 'The development of behavioural individuality in the Southern Dumpy Squid (*Euprymna tasmanica*): population and evolutionary processes'. Co-supervisor.

Simon Paul Whittcock. 2005. Ph.D. 'Across rotation factors affecting genetic improvement of *Eucalyptus globulus* in Australia'. Supervisor.

Carolyn Ann Raymond. 2001. Ph.D. by previous publication: 'Wood properties and genetic variation in temperate Eucalypts'. Technical Co-supervisor.

In addition to formal supervisory arrangements, I have contributed informally to a number of Honours and Ph.D. projects. This contribution has often taken the form of statistical and/or computing simulation advice.

Postgraduate and industry courses

When I started working with postgraduate students and industry representatives I realised that there was a great need for training in practical genetic evaluation. That was the origin of three courses on using ASReml (the premier off-the-shelf quantitative genetics analysis software) in tree breeding. In addition, I am the maintainer of the 'ASReml Cookbook', the most comprehensive web resource for this software (<http://uncronopio.org/ASReml/>).

Dutkowski, G.W. and **Apiolaza, L.A.** 2004. 'Quantitative methods for tree breeding'. Post-conference course, International IUFRO Conference '*Eucalyptus* in a changing world' on Silviculture and Improvement of Eucalypts. 19-22 October, Aveiro, Portugal. Course co-organiser. I could not present due to personal circumstances.

Apiolaza, L.A. and Dutkowski, G.W. 2002. 'Introduction to quantitative genetic analysis using ASReml'. 26-27 September, Hobart, Tasmania. Course organiser and presenter for an audience of 15 postgraduate students.

Apiolaza, L.A., Dutkowski, G.W., Greaves, B.L., and Raymond, C.A. 2001. Workshop 'Breeding objectives definition and breeding value prediction'. 26-28 February, Hobart, Tasmania. Course organiser and presenter for an audience of 25 researchers, industry partners and students.

Brief written communications to industry

'Hot Off The Seed Bed' is the confidential bulletin of the CRC-SPF's Genetic Improvement Division. It is targeted to industry partners and other research members.

Whittcock, S.P., Greaves, B.L., **Apiolaza, L.A.** and Potts, B.M. 2004. Dry matter increases necessary to justify increased propagule cost for *Eucalyptus globulus* plantations. Hot Off The Seed Bed 71. 2 p.

Whittcock, S.P., Greaves, B.L. and **Apiolaza, L.A.** 2003. An economic comparison of improved seedlings and coppice in *Eucalyptus globulus* plantations. Hot Off The Seed Bed 62. 2 p.

Dutkowski, G.W., McRae, T.A., Kerr, R.J. and **Apiolaza, L.A.** 2003. New approach combines across site data. Hot Off The Seed Bed 58. 2 p.

Li, B., **Apiolaza, L.A.**, Potts, B.M. and Tilyard, P.A. 2002. Effect of inbreeding on the basic density of harvest age *Eucalyptus globulus*. Hot Off The Seed Bed 56. 2 p.

Whittcock, S.M., **Apiolaza, L.A.** and Potts, B.M. 2002. Genetic control of the production of coppice in *Eucalyptus globulus*. Hot Off The Seed Bed 49. 2 p.

Apiolaza, L.A. and Raymond, C.A. 2002. Physical and chemical wood properties of *Eucalyptus globulus*: racial variation and genetic parameters. Hot Off The Seed Bed 44. 3 p.

Apiolaza, L.A., Potts, B.M., Gore, P.L. and Pilbeam, D.J. 2001. Peak flowering time of *Eucalyptus globulus* is under strong additive genetic control. Hot Off The Seed Bed 38. 2 p.

Presentations to industry and external researchers

Apiolaza, L.A. 2004. Model evaluation in Forestry Tasmania. In 'RWG2 (Forest Measurement and Information) Meeting'. Audience: 15, Duration: 30 minutes. Christchurch, New Zealand. November 22.

Apiolaza, L.A. and Walsh, A.M. 2003. Spatial modelling of mammal browsing in plantations. In 'RWG1 (Forest measurement and information systems) Workshop: Modelling Forests from Leaves to Landscape'. Audience: 25, Duration: 30 minutes. Melbourne, Victoria. December 2.

Apiolaza, L.A. and Alzamora, R. 2003. Economic impact of tip moth on radiata pine plantations. In 'LossFest: Loss of productivity in plantations'. Audience: 35, Duration: 10 minutes. Hobart, Tasmania. February 26.

Apiolaza, L.A. 2003. A general framework for breeding for risk traits. In 'GenResFest: Genetics of Resistance to Pests and Diseases'. Audience: 40, Duration: 30 minutes. Hobart, Tasmania. February 25.

Apiolaza, L.A. 2002. Breeding and deployment values. In 'STBA Steering Committee Meeting'. Audience: 15, Duration: 20 minutes. Hobart, Tasmania. November 29.

Apiolaza, L.A. 2002. Gene flow between exotic plantation and native *Eucalyptus*. In 'RWG1 (Forest Genetics) Meeting'. Audience: 16, Duration: 20 minutes. Brisbane, Queensland. October 21.

Apiolaza, L.A. 2002. Me, myself, I: a personal view of the analysis of repeated measurements. In 'StatFest: analysis of correlated observations'. Audience: 20, Duration: 50 minutes. Hobart, Tasmania. September 27.

Apiolaza, L.A. 2001. Why aren't we using economic breeding objectives? In 'GenFest 2001: A Slice of Life'. Audience: 20, Duration: 15 minutes. Hobart, Tasmania. November 10.

Apiolaza, L.A. 2001. New developments in quantitative genetics. In 'CRC-SPF Annual Meeting'. Audience: 80, Duration: 15 minutes. Caloundra, Queensland. October 29.

Apiolaza, L.A. 2000. The Chilean Forest Sector- a soap opera view. In 'CRC-SPF Seminar'. Audience: 20, Duration: 50 minutes. Hobart, Tasmania. October 10.

Apiolaza, L.A. and Chambers, P.G.S. 2000. Breeding for risk traits. In 'RWG7 Workshop on Breeding for resistance to pathogens and pests'. Audience: 20, Duration: 30 minutes. Port Huon, Tasmania. June 11.

Apiolaza, L.A. and Gore, P.L. 2000. Genetic analysis of flowering time. In 'Seed Orchard Management Meeting'. Audience: 12, Duration: 30 minutes. Hobart, Tasmania. June 22.

REPORTS

Apiolaza, L.A. 2005. Audit on the New Zealand Radiata Pine Breeding Company genetic evaluation system. 15 p.

Apiolaza, L.A. 2002. Evaluation of Manifold, Jenkin, Down and Ellis progeny trials: genetic parameters and thinning suggestion for the Kinglake seed orchard. 7 p.

Apiolaza, L.A. and Raymond, C.A. 2002. Genetic parameters and breeding values for growth and wood properties of *Eucalyptus globulus* at West Ridgley. 11 p.

López, G.A., **Apiolaza, L.A.**, Dutkowski, G.W., and Potts, B.M. 2000. Analysis of the *Eucalyptus globulus* base population in Argentina. Progress Report. 10 p. (in Spanish).

Dutkowski, G.W., **Apiolaza, L.A.**, Gore, P.L., McRae, A., Pilbeam, D.J. 2000. The STBA Cooperative Tree Improvement Strategy for *Eucalyptus globulus*. Revised for the period 2000-2005. STBA Technical Report TR00-03.

Ipinza, R.; **Apiolaza, L.A.**; Pérez, E. and Morales, E. 1995. CMG 1994 Annual report. Valdivia, Chile. (in Spanish).

Apiolaza, L.A.; White, T.L. and Hodge, G.R. 1994. Genetic Analysis of *Pinus radiata* in the CMG: Estimation of Realized Genetic Gains based on Open Pollinated Progeny Tests. School of Forest Resources and Conservation, University of Florida, Gainesville, U.S.A. (in Spanish).

Apiolaza, L.A.; White, T. and Hodge, G.R. 1994. Genetic Analysis of *Pinus radiata* in the CMG: Estimation of Genetic Parameters based on Open Pollinated Progeny Tests. School of Forest Resources and Conservation, University of Florida, Gainesville, U.S.A. (in Spanish).

Ipinza, R.; Pérez, E.; **Apiolaza, L.A.** and Crespell, P. 1994. CMG 1993 Annual Report. Valdivia, Chile. 80 p. (in Spanish).

AWARDS, SCHOLARSHIPS AND GRANTS

Grants

Apiolaza, L.A. 2008. Travel to South America. University of Canterbury, College of Engineering (UoC). \$5,000.

Apiolaza, L.A. and Mason, E.G. 2007. Making sense of GxE in New Zealand. Radiata Pine Breeding Company (RPBC). \$77,000.

Walker, J.C.F., Harris, P.J., Le-Ngoc, L. and **Apiolaza, L.A.** 2007. Compromised wood quality: what is good for a young tree is not good for the timber industry. New Zealand Fund for Research Science and Technology (FRST). \$2,400,000.

Apiolaza, L.A. and Kumar, S. 2006. Improvement objectives for structural and appearance-grade wood products. Radiata Pine Breeding Company (RPBC). \$135,840.

Apiolaza, L.A. and Walker, J.C.F. 2006. A light and temperature controlled glasshouse study of young wood. New Zealand Wood Quality Initiative (WQI). \$26,707.

Apiolaza, L.A., and Gore, P.L. 2001. Estimation of additive and non-additive effects for volume and wood density in STBA full sib family trials, and their effects on gains from MSP/OP seed production. Southern Tree Breeding Association (STBA). \$2,000.

Apiolaza, L.A. and Greaves, B.L. 2000. MAXDEPLOY – A software tool for evaluating multistage multi-trait assessment strategies in the selection of deployment populations (or: What should we measure?) CRC-SPF, Strategic Initiative Fund, \$9,250.

Dutkowski, G.W., Chambers, P.G., McRae, T.A., Raymond, C.A., **Apiolaza, L.A.** and Greaves, B.L. 2000. Alternative breeding and deployment objectives for *Eucalyptus globulus*. ARC, SPIRT Scheme Grant. \$223,112.

Awards and scholarships

- 1996 – 2000: NZODA (New Zealand Overseas Development Assistance) Ph.D. Scholarship.
- 1997 – 2000: New Zealand Forest Research Institute Scholarship.
- 1998: Sixth World Congress on Genetics Applied to Livestock Production, travel and registration Scholarship.
- 1994: School of Forest Sciences Award, for graduating with the highest grade point average considering my 5 years of study and the quality of my thesis project.
- 1991: Corporación Chilena de la Madera (Chile's Forest Industry Association) Academic Excellence Award, in recognition of high academic achievements.

PROFESSIONAL SERVICE AND MEMBERSHIPS

Member of the Scientific Committee for *Bosque*, the most popular forestry journal in Spanish. 2009.

Manuscript referee for Australian Journal of Botany, *Bosque*, Canadian Journal of Forest Research, *Euphytica*, *Forest Science*, *New Forests*, *New Zealand Journal of Forest Science* and *Tree Genetics & Genomes*. 1999 – present.

Referee of grants applications and final reports for CONICYT (Chile's National Commission for Scientific and Technical Research) and FWPRDC (Australia's Forest and Wood Products Research and Development Council). 2004 – 2005.

Member of the Technical Committee and Sub-Committee Chair, Radiata Pine Breeding Company (New Zealand). 2006-present.

Coordinator of the IUFRO Working Party 2.04.02: Breeding theory and progeny testing. Starting a five-year service in July 2005.

Tasmanian representative to the Australian Research Working Group 2: Forest Measurement and Information (RWG2). 2004 – 2005.

Member of the Technical Committee, Southern Tree Breeding Association (Australia). 2002-2003.

Member of the International Biometric Society. 2003 – 2005.